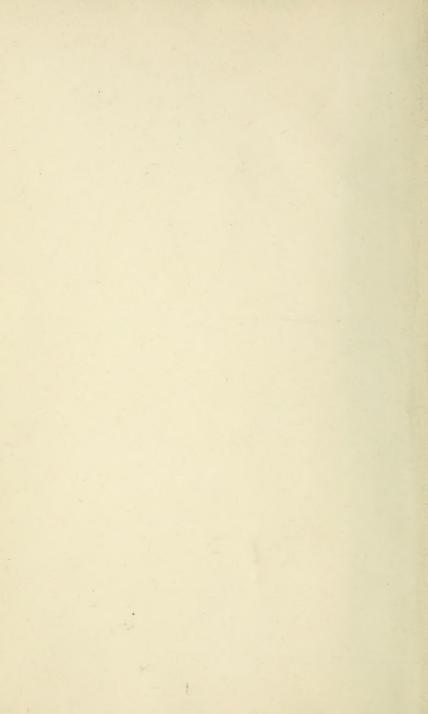




DINDING LIST JAN 1 1922



R Phys.

THE

Royal INSTITUTE OF CHEMISTRY

GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

PROCEEDINGS.

1917.

PART I.

REPORT OF THE COUNCIL for the Year ending 1st March, 1917. FINANCIAL STATEMENTS FOR 1916. BUILDING FUND. PROCEEDINGS OF THE COUNCIL.

ABSTRACTS OF THE REPORT OF THE BOARD OF EXAMINERS: Intermediate and Final Examinations: January, 1917.

CHEMISTS IN WAR.

OBITUARY.

THE REGISTER.

NOTICES: Examinations; Appointments Register, &c.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary.

30, Russell Square, London, W.C., February, 1917.

71560

P925 1917-18

Proceedings Committee, 1916-17.

HORATIO BALLANTYNE (Chairman),
SIR JAMES J. DOBBIE (President).
EDWARD J. BEVAN,
M. O. FORSTER,
ALEXANDER LAUDER,
H. R. LE SUEUR,
D. NORTHALL-LAURIE,
P. A. ELLIS RICHARDS,
W. H. ROBERTS,
W. LINCOLNE SUTTON,
THOMAS TICKLE

REPORT OF THE COUNCIL

(1916-1917).

To be submitted to the Fellows and Associates of the Institute at the Thirty-Ninth Annual General Meeting, to be held on Thursday, March 1st, 1917.

I. THE ROLL OF THE INSTITUTE.

Since the publication of the Report for 1915—1916 the Council have elected 72 Fellows (of whom 43 were Associates), 14 Associates (of whom 5 were Registered Students), and 48 new Students.

The Council record with regret the death of 28 Fellows, I Associate and II Registered Students:—

Fellows. John Angell. Percy Carter Bell. John Brock. Henry Wilson Davis. Arthur John Dickinson. John Ferguson, M.A., LL.D. (St. Andrews). Robert Glegg, B.Sc. (Aberd.). George Thomas Glover. Harold Edward Gresham, B.Sc. (Lond.). Cornelius Hanbury. Arthur Geoffrey Haydock. David Howard, Past-President. Edward Jackson. Arthur Garfield Levy. Leonard de Koningh. George Duncan Macdougald. Edmund George McBretney. Bedford McNeill, A.R.S.M., Assoc. M.Inst.C.E.

Norman Harry John Miller, Ph.D.

Thomas Purdie, LL.D., F.R.S.

(Würzburg).

Sir William Ramsay, K.C.B., F.R.S. William Gilbert Saunders. Ewing Smith. Frederick Wallis Stoddart. Oliver John Stone, B.Sc. (Lond). Vincent William Theobalds. Charles Umney. Edward Whitfield Wheelwright, M.A. (Oxon.), Ph.D. (Munich).

ASSOCIATE. Rev. Father James Crawford Bredin.

STUDENTS.

James Duncan Archibald. John Edmund Bishop. Gavin Boyd. Harold Thomas Islip. David Mitchell. Julius Sefton Prince. Albert Alexander Robinson. Frederic William Sanderson. Albert Cyril Stanbury. Edward Leslie Stockdale. Cyril George Williamson.

Of the above, the following died on active service:-

James Duncan Archibald,
John Edmund Bishop,
Gavin Boyd,
Harold Thomas Islip,
Julius Sefton Prince,
Albert Alexander Robinson,
Frederick William Sanderson,
William Gilbert Saunders,
Edward Leslie Johnson Stockdale,
Oliver John Stone,
Cyril George Williamson,

The resignations of 4 Fellows and 5 Students have been accepted.

At the date of this Report (January 26th, 1917) the Register contains the names of 1,270 Fellows and 222 Associates—an increase during the year of 10 Members. The number of Registered Students is 406, an increase of 27.

2. THE WORK OF THE COUNCIL.

The Council have held II meetings, and there have been in addition 47 meetings of Committees, Boards and Sub-Committees.

Prof. Arthur Lapworth was co-opted to the Council to fill a vacancy caused by the retirement of Dr. Gilbert J. Fowler on the appointment of the latter as Professor of Applied Chemistry in the Indian Institute of Science, Bangalore, and Mr. C. O. Bannister was co-opted in the place of the late Mr. Bedford McNeill.

The following is a list of Committees and their respective Chairmen:—

COMMITTEE.			CHAIRMAN.
Finance		***	The Hon. Treasurer.
House			Edward John Bevan, VP.
Institutions			Martin Onslow Forster, VP.
Library			The Hon, Treasurer.
Nominations and E	xamination	S	The President.
Proceedings			Horatio Ballantyne.
Public Appointment	S		The President.

A Special Committee was appointed to consider and report

on the suggestion that steps should be taken to establish Overseas Branches of the Institute. The final report has not vet been received.

In connection with the movement to arouse public interest in science, to further the teaching of science in schools and its use in industry and affairs of State, the Council have received invitations to co-operate with various bodies and have appointed representatives, as indicated below:-

The Conjoint Board of Scientific Societies.

Conference of the Committee on the Neglect of Science.

Department of Scientific and Industrial Research: Standing Committee on Glass and Optical Instru-

Conference of the Teachers' Registration Council on Professional Preliminary Examinations.

London Chamber of Commerce: Conference of the Chemical Trade Section.

The President and Prof. Herbert

Jackson, V.-P.
Mr. Edward Bevan, V.-P., Dr.
M. O. Forster, V.-P., Mr. A. Gordon Salamon, Hon. Treas., and Prof. G. T. Morgan.

Prof. Herbert Jackson, V.-P.

Dr. M. O. Forster, V.-P., and Prof. G. T. Morgan.

Mr. Edward Bevan, V.-P., Dr. M. O. Forster, V.-P., Mr. A. Gordon Salamon, Hon. Treas.

The President has also acted as a member of the Special Committee of the Royal Society appointed to deal with questions affecting the enlistment of analytical, consulting and research chemists, in view of the necessity of maintaining an adequate number of such chemists for Government work at home.

3. FINANCE.

General Account.—The receipts for the year 1916 under subscriptions and entrance fees showed a satisfactory increase over those for 1915, due partly to the payment of many arrears for the latter year and, to a greater extent, to the transference of Associates to the Fellowship and the election of new Members. The sum of £65 was received for advertisements in the Proceedings and a further amount of £19 15s. was due to the Institute on this account at the close of the year.

With the exercise of care in limiting the expenditure on printing, this item was not materially increased, notwith-standing the inclusion of advertisements. A considerable saving was effected by not printing examination papers for the candidates. They were, however, published in the Proceedings and in pamphlet form at the end of the year as usual.

In considering the statement of expenditure it must be pointed out that the period covered represents a full year during which the Institute has occupied the new premises while the account for 1915 represented only three months' full occupation and six months' part occupation of the new premises, and three months at 30, Bloomsbury Square. This explanation applies to rent, rates and taxes, gas, water, electric light and power, and household expenses. The account for 1916, moreover, includes £68 10s. 10d. for rates on 1915 account.

The cost of the special edition of the History of the Institute will be defrayed by the subscribers. The delay in closing this account has arisen from the fact that the binding was not completed until the close of the year and copies have only recently been available for delivery.

The item for Glass Research, £11 15s. 7d. is part of a sum of £100 which the Council agreed with the Department of Scientific and Industrial Research to contribute towards this object.

Pending the settlement of the Building Accounts, the Council were obliged to increase the loan from the bank by £800, which was applied to the payment of certificates from the architect as they became due. A sum of £190 was realised by the sale of £200 $4\frac{1}{2}$ per cent. War Loan Stock to meet immediate requirements. The total loan at the close of the year was £5,500, of which £2,800 had been raised for the conversion of the Institute's holding in Consols. Contrary to expectations the issue of a new War Loan which would enable the

Institute to realise the total holdings in the $4\frac{1}{2}$ per cent. loan was delayed. The Stock depreciated while the Bank Rate increased, and the account for interest amounted to almost as much as the Dividends from all the investments of the Institute, though a claim has been lodged for the corresponding recovery of Income Tax. Since the close of 1916, however, the issue of the new War Loan has enabled the Council to realise the remaining holding of £3,933 6s. 8d. $4\frac{1}{2}$ per cent. War Loan with very little loss of capital and the loan with the bank has now been reduced to £1,250, which will be cleared as funds accrue to the Building Fund.

Reviewing the general position, the Council feel less anxiety with regard to the financial position of the Institute than at the beginning of 1916, although they realise that there will be need for the exercise of careful economy during the next few years.

The accounts for Glass and Clay Research are submitted to the Department for Scientific and Industrial Research and the Department of Optical and Glassware Munitions of the Ministry of Munitions res_rectively.

Building Fund.—In spite of the war a further sum of £1,294 has been received for the fund during the year, and the Council tender their cordial thanks to all who have contributed to this substantial addition.

In Proceedings, Part III., 1916, the Council explained that the liabilities on the building were understated in their last Report owing to the fact that professional fees and certain charges due to the Bedford Estate were not included in the estimated outstanding accounts then reported by the architect. It was further advised that the Institute should consider additional claims from the contractors who had suffered loss on the prices agreed upon before the war, on work delayed by the trades dispute and subsequent economic and labour conditions. The sum now considered necessary to complete the scheme of equipment and furnishing is estimated at £2,250.

4. PROFESSIONAL CHEMISTRY AND THE WAR.

The Institute has continued to keep a register which has led to many chemists receiving commissions in branches of the services calling for scientific attainments, whilst others have received appointments in Government and controlled factories or have been transferred from military to civilian duty of a more scientific character. Every endeavour has been made to meet the requirements of the Government departments concerned, and the assistance of the Institute has been given impartially to all chemists whether connected with the Institute or not.

In four cases the unauthorised use of degrees by candidates, not members of the Institute, seeking official appointments was observed and the circumstances were reported to the proper authorities.

Many inquiries with regard to the enlistment of chemists have been dealt with and the members have been kept informed with regard to changes in the List of Certified Occupations.

An article entitled "Chemists in War," written by the Registrar, is published with this report (p. 29).

5. THE GLASS RESEARCH COMMITTEE.

The Council record with gratification the continued success of the work of the Glass Research Committee. During the year under review the Committee have received from Prof. Herbert Jackson formulas of batch mixtures for the manufacture of the following kinds of glass:—for thermometers for both high and ordinary temperatures; leadless opal for forming the enamel backing for thermometers; lead glass of high density for X-ray shields; glasses and enamels for the manufacture of artificial human eyes; tinted glass for special purposes; glass for chimneys for incandescence burners; gauge glasses; opal glass for various purposes; glass for electric light bulbs and soft black glass for filling in the brass caps of incandescence electric lamps; enamel for sealing platinum into soft glass, blue enamel for sealing metallic wire into glass,

glass for reagent bottles and white glass for milk bottles. Improvements in the batch mixtures previously published have also been introduced.

Prof. Jackson has continued the investigation of certain optical glasses urgently required for industrial purposes. Formulas for fluor crown, prism crown, heavy flint, barium crown, phosphate crown and uranium glass are now in the hands of approved firms.

Manufacturers desiring to use the formulas have been supplied with the necessary particulars, in accordance with the conditions agreed upon with the Board of Trade and, latterly, with the approval of the Glassware and Optical Munitions Department of the Ministry of Munitions.

In March, 1916, the President of the Board of Trade expressed the Board's appreciation of the services rendered by Prof. Jackson to the glass industry, particularly in connection with the production of laboratory glassware.

The Committee are formulating a scheme for testing chemical laboratory ware, which will be published in due course.

Clay Research. — On behalf of the Glassware and Optical Munitions Department of the Ministry of Munitions, Prof. Jackson has also continued the researches on clay used for making pots employed in the manufacture of optical and chemical glass.

Porcelain and Enamels.—The Committee have tested and reported on samples of porcelain for laboratory apparatus submitted by firms making such ware and have offered suggestions in connection therewith. They have reason to believe that the principal firms are steadily improving their products.

Preliminary inquiries have also been made with reference to enamel for large vessels used in manufacturing operations.

6. HOUSE COMMITTEE.

The completion of the equipment and furnishing of the new building has been postponed until the necessary funds are available for the purpose.

7. INSTITUTIONS COMMITTEE.

In view of prevailing circumstances and the difficulty of arranging for the inspection of institutions, the Committee have not recommended any addition to the list of Institutions recognised for the training of candidates for the Examinations of the Institute.

8. EXAMINATIONS.

The Board of Examiners for the past year consisted of:—
The President, Chairman.

For the Intermediate Examination and in General Chemistry: Arthur Harden, D.Sc., Ph.D., F.R.S., F.I.C.

For the Final Examination:

(a)	Mineral	Chemistry	• • •	George Nev	ill	Huntly,	B.Sc.,	A.R.C.S.,

(b) Metallurgical Chemistry
 (c) Physical Chemistry
 ... Frederick George Donnan, M.A., Ph.D., F.R.S., F.I.C.

(d) Organic Chemistry ... William Jackson Pope, M.A., F.R.S., F.I.C.

(e) The Chemistry of Food Bernard Dyer, D.Sc., F.I.C. and Drugs, Fertilisers and Feeding Stuffs, Soils and Water.

Therapeutics, Pharma-Frederick Gowland Hopkins, D.Sc., cology and Micro-M.B., M.A., F.R.S., F.I.C. scopy.

(f) Biological Chemistry, Bacteriology, Fermentation and Enzyme Action.

Alfred Chaston Chapman, F.I.C.

The places and dates of the Examinations were as follows:—

Intermediate Examination:—At the Institute, July, 1916, and January, 1917; and at the Royal Technical College, Glasgow, July, 1916. Final Examination:—

Mineral Chemistry:—At the Institute, and at the Royal Technical College, Glasgow, July, 1916. A candidate in Adelaide was also examined in this Branch in June.

Organic Chemistry:—At the Institute, July, 1916, and January, 1917; at the Royal Technical College, Glasgow, and at the Royal College of Science for Ireland, July, 1916.

Chemistry of Food and Drugs, etc.:—At the Institute, July, 1916, and January, 1917.

Biological Chemistry:—At the Institute and at the laboratory of Mr. A. Chaston Chapman, October, 1916.

The Examinations at Glasgow were held under the supervision of Professor G. G. Henderson and Mr. G. Nevill Huntly; that at Dublin, under the supervision of Professor Gilbert T. Morgan and Professor Sydney Young, and that at Adelaide under the supervision of Dr. W. A. Hargreaves and Mr. W. Tidd Rowe. The following have assisted the Board during the year:—Mr. L. E. Hinkel at the Examinations held in London; Miss M. M. J. Sutherland, D.Sc., at the Examinations at Glasgow, and Mr. A. O'Farrelly at the Examination at Dublin. Mr. John Webster assisted at the Examinations in Therapeutics, Pharmacology and Microscopy.

The thanks of the Council, for the use of laboratories, have been accorded to the Governors of the Royal Technical College, Glasgow, to the Department of Agriculture and Technical Instruction for Ireland, the Department of Chemistry, South Australia, and to Mr. A. Chaston Chapman.

The results are summarised in the following table:—

		E	XAMIN	ED.	PASSED.
	• • •	• • •	5	• • •	5
Final (A.I.C.) Examination:—					
				* * *	3
			11		7
Branch (e) Chemistry of Food and Drug	gs, etc.	:			
For the Associateship			4		4
For the Fellowship			1		1
Branch (f) Biological Chemistry			1		1
			25		21
			_		

Arrangements are being made for the examination of two candidates in New Zealand.

9. REGULATIONS.

The Regulations for the admission of Fellows, Associates and Students were reprinted in November, 1916.

In the same month, the Council published a revised scheme of Regulations based on those referred to in their report for the year 1915–1916, and issued a circular to the Fellows and Associates asking for their views on the new proposals. The main objects of the new scheme are to promote the further

organisation of the profession of chemistry, to make the Institute more completely representative of the profession, to provide for the admission of trained chemists who have been prevented by the prevailing conditions from taking the Examinations, and to avoid as far as possible the imposition of unnecessary examinations on Candidates who have obtained degrees with First or Second Class Honours in Chemistry or other degrees or diplomas recognised by the Council as equivalent. Every care will be taken to safeguard the interests of existing Members and to ensure that the standards of efficiency which the Fellowship and Associateship represent shall be fully maintained.

Many letters with reference to the proposals have been received and are under consideration.

10. PUBLIC APPOINTMENTS.

The Council have made representations in matters affecting official chemical appointments and the interests of professional chemistry to the Board of Agriculture and Fisheries, to the Ministry of Munitions, to the Local Government Board for Scotland, and to other authorities.

II. LIBRARY.

The Council record their thanks to all donors of volumes and pamphlets during the year. The list of additions to the Library and the list of journals received will be published in Proceedings, Part II.

12. APPOINTMENTS REGISTER.

The Appointments Register continues to prove helpful to Fellows and Associates. There has been an unusual demand for the services of professional chemists, however, and at the present time only a few members have their names on the list with a view to obtaining better positions than they now hold.

13. HONORARY CORRESPONDING SECRETARIES.

The Council record their thanks to the Honorary Corre-

sponding Secretaries for their services.

Mr. W. M. Hamlet, on his retirement from the appointment of Government Analyst for New South Wales, has resigned his position as Honorary Corresponding Secretary and Dr. Thomas Cooksey has been elected in his place.

14. PUBLICATIONS, 1916—1917.

The Proceedings for 1916 were published in four parts, issued in February, April, August and November.

30, Russell Square, London, W.C., January 26th, 1917.

REPORT OF THE AUDITORS.

Having examined the Books and Vouchers, and verified, with the Bank of England and the London County and Westminster Bank, Ltd., the investments standing to the credit and scheduled in the Assets of the Institute at the close of business on December 30th, 1916, we certify that the following statements are correct.

HERBERT F. STEPHENSON, GEORGE CECIL JONES, L. T. THORNE.*

Hon.
Auditors,
1916-17.

January 22nd, 1917.

^{*} Co-opted in the place of Lieut,-Col, E. F. Harrison.

INSTITUTE OF CHEMISTRY BUILDING FUND.

STATEMENT OF RECEIPTS AND EXPENDITURE SINCE THE OPENING OF BUILDING FUND A/C, 1909—1916.

8. 8. d.	20,334 10 8 4,806 11 0 61 8 8 62 16 6	£25,265 6 10	£ s. d. £1,799 14 2 850 0 0
EXPENDITURE. £ s. d. Bedford Estate			Loan from General A/c
RECEIPTS.		£25,265 6 10	ASSETS. ### ASSETS. ###################################

THE INSTITUTE OF CHEMISTRY

Founded, 1877.

STATEMENT OF RECEIPTS AND EXPENDITURE

		ENE	R/	\L
1915.	RECEIPTS. £ s. d.	£	8.	d.
10100	Balance at Bank on the 31st			
£194 0 10	Dec., 1915	12	5	õ
	Subscriptions—			
1.035 7 3	Fellows' 1,102 10 7			
2 53 1 0	Associates' 250 14 0			
81 0 0	Students' 86 5 0			
		1.439	9	7
147 0 0	Entrance Fees	367	10	0
245 18 8	Dividends	338	17	6
10 14 2	Sale of Publications	16	8	9
8 9 11	Sundry Receipts	2	16	3
	Examinations and Laboratory			
729 13 3	Account	714	12	7
			1.77	
11 4 0	Appointments Register Advertisements in the Proceed-	б	17	6
	ings	65	0	0
	ings	0.,		
		0.000	17	7
2,816 9 0	Life Compositions and Fees	2,963	14	7
74 11 0	reserved for Investment	58	16	C
18 7 6	Special Edition of the History	2	3	6
5 0 9	Building Fund: Postage (1914)	_	_	
4.70) 0 0	Loan from Bank increased during			
	1916	800	0	0
	Sale of £200 4½ War Loan	190	0	0

£4,014 17 1

£7.614 8 3

OF GREAT BRITAIN AND IRELAND.

Incorporated by Royal Charter, 1885.

FOR THE YEAR ENDED DECEMBER 31st, 1916.

ACCOUNT				
1915.	EXPENDITURE.	£	8.	d.
£243 3 10 119 0 8	Printing, Stationery, Office Books, etc Postage	251 113		11 2
122 18 4	Rent	300	0	0
200 4 2	1915 Account)	398	9	3
56 0 9 30 9 10	Repairs and Furnishing	$\frac{52}{41}$	18 7	9 11
901 6 4 51 9 5	Salaries, Wages, etc	919		2
91 14 0	Gas, Water and Electric Light and Power		$\frac{10}{12}$	0
21 18 11	Telephone		19	7
504 11 6	Examiners and Assistants (Fees and Expenses)	240	6	4
86 3 5	Apparatus and Materials	47	0	6
6 2 7	Sundry Examination Expenses		_	
21 7 9	Library Account (see over)	9	15	4
84 2 3	Household, Fuel, etc	109	3	1
29 11 8 18 7 0	Miscellaneous Expenses	28	17	7
10 / 0	Legal Expenses			
2 ,588 12 5		2,676	1	10
25 0 0	Removal Expenses	~ 1	_	C
45 10 6	Special Edition of the History of the Institute Glass Research	51 11	$\frac{2}{15}$	6
982 10 2	Loan to Building Fund (additional)	817	4	0
· · · · · · · · · · · · · · · · · · ·				
825 19 10 2,789 2 7	Purchase of Investments from Building Fund Purchase of War Loan Stock		_	
~,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rent (in lieu of Deposit on Lease) repaid to			
300 0 0	Building Fund	001		_
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Interest on Loan from Bank Balance at Bank on the 31st Dec., 1916	321 137	6 6	9 5
		101	,	J
£7,614 8 3		£4,014	17	1

GENERAL

STATEMENT OF ASSETS AND

1915.	ASSETS.		£	s.	d.
£12 5 5	Balance at Bank		137	6	5
405 15 7	Approximate Value of Furniture		379	13	8
	Approximate Value of Apparatus and				
258 12 5	Materials		221	7	6
415 17 9	Approximate Value of Library		383	18	10
	£3,933 6s. 8d. War Loan Stock, 30th				
(4,017 1 5)	Dec., 1916		3.776	0	0
	£3,000 Victoria 4 per cent. Inscribed				
2,880 0 0	Stock, 30th Dec., 1916		2,700	0	0
	£1,000 New Zealand 4 per cent. In-				
960 0 0	scribed Stock, 30th Dec., 1916		840	0	0
	£700 Canada 3½ per cent. Registered				
5 75 15 0	Stock, 1930–1950, 30th Dec., 1916		504	0	0
	£500 Metropolitan 3 per cent. Stock,				
4 11 5 0	30th Dec., 1916		335	0	0
	£500 Great Western Railway 2½ per cent.				
30 2 10 0	Debenture Stock, 30th Dec., 1916		255	0	0
	£1,833 Midland Railway 2½ per cent. Per-				
981 11 2	petual Preference Stock, 30th Dec., 1916		843	0	0
982 10 2	Loan to Building Fund		1,799	14	2
	Sunary Accounts due		87	4	6
	Building and Lease, 30, Russell Square.				
					-
£25 0 0	LIBRARY FUND ACC RECEIPTS.		UNT £ 25	s. 0	$\frac{d}{0}$
3 19 9	Deficit (1915)				
	Deficit (1915)		£25	0	0
3 19 9	BUILDINGS FUND ACC RECEIPTS. £ s. Balance at Bank, Dec. 31st, 1916:— Current A/c	_	UNT		_
28 19 9 28 19 9 £431 9 6 5,250 0 0	BUILDINGS FUND ACC RECEIPTS. £ s. Balance at Bank, Dec. 31st, 1916:— Current A/c Deposit A/c		UNT £	f s. 19	0 0 0r d.
\$\frac{28}{28} \frac{19}{9} \\ \tag{\mathcal{2}} \tag{28} \frac{19}{9} \\ \tag{5,250} 0 0 \\ 781 4 0	BUILDINGS FUND ACC RECEIPTS. £ s. Balance at Bank, Dec. 31st, 1916:— Current A/c Deposit A/c Contributions		UNT	f s. 19	0 — or d.
28 19 9 28 19 9 £431 9 6 5,250 0 0	BUILDINGS FUND ACC RECEIPTS. £ s. Balance at Bank, Dec. 31st, 1916:— Current A/c Deposit A/c Contributions Interest and Dividends Realisation of Investments	<i>d</i>	UNT £	f s. 19	0 0 0r d.
28 19 9 28 19 9 £431 9 6 5,250 0 0 781 4 0 39 1 1 825 19 10	BUILDINGS FUND ACC RECEIPTS. £ s. Balance at Bank, Dec. 31st, 1916:— Current A/c Deposit A/c Contributions Interest and Dividends Realisation of Investments Repayment of Deposit on Lease from Gene	<i>d</i>	UNT £	f s. 19	0 0 0r d.
£431 9 6 5,250 0 0 781 4 0 39 1 1	BUILDINGS FUND ACC RECEIPTS. £ s. Balance at Bank, Dec. 31st, 1916:— Current A/c Deposit A/c Contributions Interest and Dividends Realisation of Investments	<i>d</i>	UNT £	f s. 19	0 0r d.
\$\frac{28}{28} \frac{19}{9} \\ \tag{28} \frac{19}{9} \\ \tag{28} \frac{19}{9} \\ \tag{5},250 0 0 \\ \tag{39} 1 1 \\ 825 19 10 \\ \tag{309} 0 0	BUILDINGS FUND ACC RECEIPTS. £ s. Balance at Bank, Dec. 31st, 1916:— Current A/c	d	UNT £ 71 1,294 817 £2,183 £	f s. 19 0 4 4 3 s. 16 0	0

ACCOUNT.

£982 10 2

1,700 0 0

LIABILITIES, Dec. 31st, 1916.

LIABILITIE	S, Dec. 31st, 1916.
1915.	LIABILITIES. £ s. d. £ s. d.
	Subscriptions received in advance—
£23 1 0	Fellows' 15 15 0
3 3 0 1 0 0	Associates' 3 3 0 Students' 1 5 0
1 0 0	
	Subscriptions to Special Edition
18 7 6	of the History of the Institute 2 3 6
	Fees for the January (1917) Examinations received in
89 5 0	advance) 63 0 0
14 4 10	Balance on Biological Examinations A/c 14 4 10
75 0 0	Rent outstanding 75 0 0
68 10 10 4,700 0 0	Rates outstanding Loan from Bankers (see Report) 5,500 0 0
4,700 0 0	Loan from Dankers (see Report) 5,500 0 0
the Very	anded Dec 21st 1010
the rear e	ended Dec. 31st, 1916.
£7 12 0	EXPENDITURE. £ s. d. Deficit: 31st Dec., 1915 3 19 9
10 19 9	Books, Journals, etc 9 15 4
10 8 0	Arrangement of Library Balance: 31st Dec., 1916 11 4 11
£28 19 9	£25 0 0
the Year e	ended Dec. 31st, 1916.
	EXPENDITURE. £ s. d. £ s. d.
	Building Costs:— Contractors and Sub-Con-
£7,931 16 7	tractors 1,420 17 10
400 0 0	Architect 337 0 10 Surveyor 140 4 6
	Surveyor 140 4 6 Consulting Electrical En-
404 4 4	gineer 38 1 0
131 1 1 6 1 10	Clerk of Works Miscellaneous Expenses 44 2 6
	1,980 6 8
61 8 8	Bedford Estate Charges 140 0 6 Interest repaid to General Account
7 16 9	Postage (1915) to General Account
71 19 8	Balance at Bank, 31st Dec., 1916 62 16 6
£8,610 4 7	£2,183 3 8

LIABILITIES.

Loan from General Account Outstanding Accounts, estimated at... £ s. d.

 $\begin{array}{ccccc} 1,799 & 14 & 2 \\ 850 & 0 & 0 \end{array}$

Proceedings of the Council.

NOVEMBER, 1916-JANUARY, 1917.

Glass Research.—Since October, 1916, the Glass Research Committee have received reports from Prof. Jackson with regard to formulas for the following:—

(XXIV.) 40. Barium Crown glass of certain optical properties with formula for the same. (Communicated to the Ministry of Munitions.)

(XXV.) 41. Phosphate glass similar in optical properties to a foreign glass known as 8.367—an important constituent of certain apochromatic

lenses. (Communicated to the Ministry of Munitions.)

(XXVI.) 42. Glass suitable for vessels such as tumblers, measures, etc., which are graduated by marks and figures in enamel. (Communicated to Messrs. Wood Bros. Glass Co., Ltd., Barnsley, and to the Ministry of Munitions.)

(XXVII.) 43. Clear glass having no tendency to go opal at any temperature and possibly suitable for the manufacture of electric light bulbs and other glass vessels into which certain metallic wires have to be sealed. (Com-

municated to the Edinburgh and Leith Flint Glass Co.)

(XXVIII.) 44. White zinc glass showing no tendency to reduce in the

flame and having fine general properties.

(XXIX.) 45. Optical glass made at the request of the Glassware and Optical Munitions Department of the Ministry of Munitions. The glass is one of a series of five which have been asked for and are being worked out. (Communicated to the Ministry of Munitions.)

A Society of Glass Technology has been formed with headquarters at Sheffield University. Mr. W. F. J. Wood, B.Sc., of Messrs. Wood Bros. Glass Co., Ltd., Barnsley, has been elected the first President, and the Vice-Presidents include Messrs. F. Cheshire and A. S. Esslemont, of the Glassware and Optical Munitions Department of the Ministry of Munitions, Sir William Crookes, O.M., F.R.S., Mr. S. N. Jenkinson, of the Edinburgh and Leith Flint Glass Co., and Prof. Herbert Jackson.

Attention has been directed to the investigations conducted by Dr. Boswell, of the Imperial College of Science and Technology, on "British Resources of Sands Suitable for Glassmaking," copies of which have been forwarded by the Committee to various glassmakers working in co-operation with them.

The Department of Scientific and Industrial Research

has appointed a Standing Committee on Glass and Optical Instruments, of which Prof. Jackson is Chairman. The Standing Committee will co-operate with the Glass Research Committee of the Institute and refer matters to them for consideration from time to time.

Scientific and Industrial Research.—On December 1st, 1916, at the Institution of Civil Engineers, Lord Crewe, with a number of members of the Committee of the Privy Council for Scientific and Industrial Research, received a deputation from the Board of Scientific Societies. The deputation, which included representatives of many scientific and professional bodies, was introduced by Sir Joseph J. Thomson, President of the Royal Society, who stated that the Board had been formed to promote co-operation between those engaged in pure science and those occupied in the industrial application of science, and that the Board desired to urge the importance of increased grants for scientific and industrial research.

Lord Crewe announced that the Government had decided to establish a separate Department of Scientific and Industrial Research for Great Britain and Ireland, under the Lord President of the Council, with the President of the Board of Education as Vice-President, and (subject to the consent of Parliament) to place a large sum of money at the disposal of the new Department, to be used as a fund for the conduct of research for the benefit of national industry on a co-operative basis.

In order to enable the Department to hold the new fund and any other money or property for research purposes, a Royal Charter has been granted to the official members of the Committee of the Privy Council for Scientific and Industrial Research, under the title of the "Imperial Trust for the Encouragement of Scientific and Industrial Research."

Dr. H. Frank Heath, C.B., has been appointed permanent secretary of the new Department. All correspondence should be addressed to The Secretary, Department of Scientific and Industrial Research, Great George Street, Westminster, S.W.

The Department will obtain financial support on what may be described as a co-operative basis:

- (a) The Treasury has agreed to set aside a large sum, which will form the nucleus of the fund. The amount is four or five times as much as has ever before been allocated for such work.
- (b) In order to encourage firms interested in various trades to make generous contributions, the Treasury have agreed that any money given for research, on specified terms, shall be regarded as working expenses, and will thus be free from income tax and excess profits tax. In other words, of any sum which a prosperous industry may set aside, about 77 per cent. will consist of money which would otherwise be paid over to the Exchequer, and only the balance will come out of the pockets of the contributors—private firms or limited liability companies engaged in trade.

With a view to promoting this co-operative movement Industrial Associations will be formed in connection with various trades for the promotion of research, and they will work under the supervision of the new central authority.

The research of individual workers will be encouraged by grants.

The new Department of Scientific and Industrial Research will be empowered under its charter to administer any sums which may be left by will for this great national movement.

Examinations.—The Council have received the Reports of the Board of Examiners on the Final Examinations held in January, 1917.

Certified Occupations.—In view of the fact that many letters have been received concerning the enlistment of professional chemists with the Forces, the following information is reproduced from the List of Certified Occupations (R. 117), published on February 1st:—

Under "General Reservations," provision is made for the exemption of Works Chemists of twenty-seven years and over, and a footnote states that where the works chemist at important works is under twenty-seven and is the only man left

in that position he should be treated as in a certified occupation.

Under "Reservations in Particular Trades," analytical, consulting or research chemists are to be treated as in a certified occupation if recommended by the Royal Society. Chemists engaged in chemical trades, or in dyestuff (natural or artificial) manufacture, are to be treated as in a certified occupation, and analytical chemists engaged with wholesale manufacturing druggists are to be so treated if of the age of thirty or upwards.

In a notice appearing in the front part of the List it is stated that another List will be issued in a few weeks, in which the reservations will be reduced by a further raising of the age limits, especially in the trades not mainly engaged on Government work, but it is not known whether these proposed alterations are likely to affect chemists. Employers are advised to take steps to reorganise their staffs with a view to being prepared to release more men of military age and fitness for the Army.

Officers and Members of Council.—The Officers and Members of Council who retire at the Annual General Meeting on March 1st, 1917, under the provisions of Bye-law 30, are as follows:—Vice-Presidents: Edward John Bevan, and Arthur Smithells, F.R.S. Members of Council: Robert Frederick Blake, William Thomas Burgess, Charles Frederick Cross, B.Sc., William Richard Eaton Hodgkinson, Ph.D., Alfred Henry Knight, Arthur Lapworth, D.Sc., F.R.S., Henry Rondel Le Sueur, D.Sc., Francis Richard O'Shaughnessy, A.R.C.S., and William Henry Willcox, C.M.G., M.D., B.Sc.

The Officers and Members of Council nominated for election in their stead are:—Vice-Presidents: William Thomas Burgess, and Charles Frederick Cross, B.Sc. Members of Council: Cecil Howard Cribb, B.Sc., Ernest Mostyn Hawkins, Harold George Lacell, A.R.C.S., Arthur Edgar Leighton,* Frederick James Lloyd, William Rintoul, Harry Silvester, B.Sc., Jocelyn Field Thorpe, D.Sc., F.R.S., Leonard Ellerton Vlies, and Edmund White, B.Sc.

^{*} In the place of Mr. Richard Bodmer, who has resigned.

Abstract of the Report of the Board of Examiners.

FINAL (A.I.C.) EXAMINATIONS, JANUARY, 1917.

BOARD OF EXAMINERS .-- (See pp. 10-11.)

The Examinations were held in the laboratories of the Institute from January 8th to 12th inclusive.

Five Candidates presented themselves. The results are shown in the following table:—

	NUMBER	NU	JMBEI
	EXAMINED.	\mathbf{P}	ASSED
Final Examination:—			
Branch (d) : Organic Chemistry	3		2
Branch (e): The Chemistry and Micro-			
scopy of Food and Drugs, etc	2		2
1,			
	5		4
	_		

The Board were well satisfied with the work of the successful candidates.

Candidates who passed the Final Examination for the Associateship (A.I.C.):

In Branch (d): Organic Chemistry.

Ingham, John William, B.Sc. (Lond.)... University College, Nottingham.

Mardles, Ernest Walter John, B.Sc...

(Lond.)

(Lond.)

(Lond.)

(Lond.)

(Lond.)

In Branch (e), The Chemistry (and Microscopy) of Food and Drugs, Fertilisers and Feeding Stuffs, Soils and Water.

Haythornthwaite, Alan, B.Sc., A.R.C.S. Imperial College of Science and Technology; and with A. H. M. Muter, F.I.C.

Paul. Ernest, B.Sc. (Lond.) ... The University. Birmingham.

PAPERS SET AT THE JANUARY EXAMINATIONS.

Final Examinations for the Associateship.

Branch (d).—Organic Chemistry.

MONDAY, JANUARY 8th, 1917: 10 a.m. to 1 p.m.

(The Candidate is expected to attempt all the questions.)

- 1. How may carbonyl chloride be prepared? State the principal reactions of this substance and indicate its technical uses.
- 2. Under what conditions do the alkyl halogen compounds react with magnesium and related metals? What applications have the products of such reactions found in synthetic organic chemistry?
- 3. Give an account of the rules governing substitution in aromatic compounds. Show how these rules affect the economical preparation of metatoluidine, ortho nitro benzaldehyde and chlorobenzene metasulphonic acid.
- 4. What are the benzidine and semidine isomeric changes? Give examples of the occurrence of these changes and explain how they may be brought about.
- 5. How may the following substances be prepared:—Itaconic acid, pentaerythritol, purin, sulphonal, veronal?

TUESDAY, JANUARY 9th, 1917: 10 a.m. to 4.30 p.m.

You are provided with 50 grams of paratoluidine. Prepare from it purified specimens of three crystalline derivatives. Hand in your specimens stating the physical constants which they show and the yields which you have obtained.

WEDNESDAY, JANUARY 10th, 1917: 10 a.m. to 4.30 pm.

Make a full examination of, and write a report upon, the sample of soap provided.

THURSDAY, JANUARY 11th, 1917: IO a.m. to 4.30 p.m.

Determine the percentage of benzene and toluene in the sample of crude toluene provided.

FRIDAY, JANUARY 12th, 1917: 10 a.m. to 4.30 p.m.

Ascertain the essential constituent of the crude technical product handed to you. Separate this substance in a pure condition and hand in specimens of this compound and of any of its derivatives which you can prepare.

Branch (a).—The Chemistry and Microscopy of Food and Drugs Fertilisers and Feeding Stuffs, Soils and Water.

MONDAY, JANUARY 8th, 1917: 10 a.m. to 1 p.m.

1. What are the distinctive properties of the following fats:-

Cacao Butter, Coconut Oil, Palm Kernel Oil, Butter Fat, Lard?

Give some brief account of the process of hydrogenisation of liquid oils on a commercial scale.

- 2. Enumerate the various substances from which baking powders are prepared, and mention the special impurities which any of such substances are liable to contain, indicating the probable origin of such impurities.
- 3. Indicate the principal methods in use for the sterilisation (on a waterworks scale) of river water which has to be used for drinking purposes.

(Answer in a separate book.)

- 1. Enumerate the pharmacopæal preparations of nux vomica, giving the strength and medicinal dose of each.
- 2. Give an account of the microscopic character of the starch-grains peculiar to each of the more familiar cereals and to other common food materials.
- 3. Compare the symptoms of poisoning by nitroglycerine with those produced by nitrobenzene and picric acid. State how you would identify each of these three substances in the contents of a stomach.

2 p.m. to 5 p.m.

- 1. Examine microscopically the deposit from the urine A. Make drawings of the crystals or other structures present, and so far as possible decide upon their nature.
- 2. The sample of coffee B contains chicory. Prepare slides for the microscope showing structures characteristic of the latter. The preparations are to be such as can be preserved.
 - 3. Identify the alkaloid which has been added to the milk C.

TUESDAY, JANUARY 9th, 1917: 10 a.m. to 4.30 p.m.

Analyse the sample of Milk, and draw up a certificate in suitable form.

WEDNESDAY, JANUARY 10th, 1917: 10 a.m. to 4.30 p.m.

Determine the proportions of quinine and iron in the sample of Citrate of iron and Quinine.

Report on the purity of the sample of Olive Oil.

(The latter exercise may be finished to-morrow.)

THURSDAY, JANUARY 11th, 1917: 10 a.m. to 4.30 p.m.

Determine the moisture, oil, albumenoids, crude fibre, ash and sand in the sample of Linseed Cake.

FRIDAY, JANUARY 12th, 1917: 10 a.m. to 4.30 p.m.

Identify the white powder submitted to you, exan ining it as fully as time allows.

Candidates for the Final Examination were required to translate passages from French and German technological literature.

TRANSLATION

Time allowed: 11 hours.

Translate into English.

Die "Hypothese der mehrfachen Bindung" also ist für die Deutung der ungesättigten organischen Verbindungen die gebräuchliche geworden. Mit ihrer Hülfe ist es möglich gewesen, den ungesättigten Körpern Strukturformeln beizulegen, welche deren genetische Beziehungen zueinander und zu den gesättigten Körpern gut darstellen. Auf diese Hypothese ist dann ferner, wie wie S. 798 ff. dargelegt werden wird, auch die Stereochemie der ungesättigten Kohlenstoff-Verbindungen gestützt worden; und auch bei solcher Ausdehnung hat sich jene Annahme als nützlich zur Ableitung der theoretisch möglichen Fälle von Raum-Isomerie erwiesen und zu Folgerungen geführt, welche die Erklärung der beobachteten Isomeriefälle ermöglichten. Trotzdem ist man noch nicht dazu gelangt, über das Wesen der mehrfachen Bindung eine klare Vorstellung zu gewinnen; während man auf dem Papier oder am Modell die auf diesen Begriff sich stützende Formulierung gut durchführen konnte, gewann man doch keine rechte Befriedigung, sobald man in den Formeln mehr als eine Verteilung der Konstitutions-Möglichkeiten unter die beobachteten Verbindungen suchte. Auf diese Bedenken soll später (S. 791 ff.) eingegangen werden. Vorher aber mögen die Strukturformeln, welche sich aus der Annahme mehrfacher Kohlenstoffbindung ergeben, für die einfachsten Glieder der Kohlenwasserstoffreihen CnH2n und CnH2n-2 entwickelt und kurz begründet werden.

Meyer-Jacobson.

Pouroir rotatoire. Les alcaloides des quinquinas présentent tous la propriété de faire dévier le plan de polarisation de la lumière, tantôt vers la droite, tantôt vers la gauche, de quantités variables avec chaque alcaloïde. l'ette propriété importante fut signalée pour la première fois en 1845 par A. Bouchardat, alors pharmacien en chef de l'Hôtel-Dieu de Paris qui reconnut, en outre, que la température a une influence très marquée sur le pouvoir rotatoire de la quinine en solution alccolique, lequel s'affaiblit quand la température augmente. A. Bouchardat proposa d'utiliser les propriétés optiques des bases des quinquinas pour reconnaître la pureté du sulfate de quinine. Nous verrons plus loin que cette méthode jouit aujourd'hui d'une grande faveur. Non seulement la température, mais encore la dilution ou la nature du dissolvant, fait varier le pouvoir rotatoire des bases des quin-Ces faits, établis par M. Oudemans, ne devront pas être méconnus lorsqu'il s'agira son d'établir le pouvoir rotatoire d'un de ces alcaloïdes, soit de rechercher son degré de pureté. Les pouvoirs rotatoires des bases des quinquinas ont été déterminés par un grand nombre d'auteurs et entre autres par M. Oudemans, qui a pu dégager des nombreux résultats numériques obtenus par lûi, un certain nombre de conséquences générales importantes qu'on peut résumer de la façon suivante:

1º Lorsqu'à un même poids d'un alcaloïde diacide, on ajoute des quantités croissantes d'un acide minéral, le pouvoir rotatoire varie et prend sa valeur maxima quand on a ajouté un peu plus de la quantité d'acide suffisante pour transformer l'alcaloïde en sel neutre.

2º Avec certains acides organiques, ce maximum n'est atteint qu'en employant un grand excès d'acide. - E. Léger.

Chemists in War.

By the REGISTRAR OF THE INSTITUTE.

Owing to the conditions of modern warfare chemists have been more than ever in request. To give a full account of their work, if it were possible, would be imprudent, but it is well to place on record a statement confined to what it is permissible to relate, giving some indication of the importance of the profession of chemistry to the nation in these times. It may be doubted if the general community realises that the chemist plays a part in the production of all iron, steel, copper and other metal, of every explosive, of cloth, leather, rubber, glass, and material of war generally, and that his help is no less necessary in connection with the supplies of food, pure water and medicine.

The Government has secured the guidance of chemists and other men of science to assist in the investigation of suggestions and inventions and to bring their knowledge and experience to bear on measures and devices of offence and defence, while apart from those acting in an advisory capacity, chemists have been called for service in the field as well as in the factory. In such times there is a demand for the solution of problems of an unusual character which can only be entrusted to men of the highest scientific training, with initiative and foresight.

So much had we come to rely on foreign sources of supply for many of our needs, that means had to be found for dealing promptly and efficiently with difficulties some of which, unless overcome, threatened serious disaster. The chemists of the country have not been found wanting.

The laboratories of our universities and colleges have

become small factories for the preparation of drugs and medicaments, and many institutions have been entrusted with the examination of materials used in the manufacture of explosives. The measures taken in this emergency secured uniformity in method and the standardisation of processes which would otherwise have been difficult to attain. Under the supervision of their professors, students unfit for service with the colours have been helping the country and at the same time gaining useful experience.

Several hundred chemists have been engaged for assistance in the laboratories and in the works of Government and controlled establishments supplying armaments, munitions, and other materials of war. Many of these have found an opportunity of helping the country through the registers maintained by the Institute of Chemistry and other societies for this purpose. In cases where the number of men having technical experience in some branches was limited, the authorities have made arrangements for probationary training, so that their services should be available when required in new factories.

The staffs of the chemical departments of Woolwich Arsenal and other Government factories have been considerably augmented, as also that of the Government Laboratory, which, as the recently published report shows, has been largely responsible for the examination of foodstuffs and many other

requirements of the Expeditionary Forces.

In previous wars the authorities have considered officers of the R.A.M.C. sufficiently trained for all necessary military duties involving chemical knowledge, but in the present conflict, with an unprecedented demand for medical men. qualified chemists have volunteered in such numbers as to give practical force to the suggestion that they should be engaged for the purification and examination of water supplies and for dealing with matters of hygiene requiring chemical knowledge. As a result many have been appointed to commissions and engaged for scientific work, not only with the R.A.M.C., but also with the A.S.C., A.O.D., and other units. Attached to various forces at home, with the armies on the

Continent and in Africa, chemists have thus rendered valuable service.

In consequence of methods of offence initiated by the enemy, such as the employment of poisonous gases, there arose a further demand for men with training in chemistry for service in the field. For the duties involved the authorities deemed it expedient to enlist men with such training, rather than entrust them to men without any scientific knowledge, and the unit thus formed is a fighting force. With the assistance of the universities and technical colleges and the various bodies interested in chemistry, an entirely new force was brought into existence. At that time there was no question of compulsion, yet it was raised with little difficulty, being subsequently augmented, by the addition of other troops. The men went voluntarily, and were sent abroad at very short notice, and after short training went into action. The officers were mainly selected from chemists who already held commissions, while sergeants and corporals with knowledge of chemistry were transferred from other units. That they did their work well is shown by the following abstracts from dispatches of Lord French and Sir Douglas Haig:-

LORD FRENCH, October 15th, 1915:

"Owing to the repeated use by the enemy of asphyxiating gases in their attacks on our positions, I have been compelled to resort to similar methods; and a detachment was organised for this purpose, which took part in the operations commencing on the 25th September for the first time.

"Although the enemy was known to have been prepared for such reprisals, our gas attack met with marked success, and produced a demoralising effect in some of the opposing units, of which ample evidence was forthcoming in the captured trenches.

"The men who undertook this work carried out their unfamiliar duties during a heavy bombardment with conspicuous gallantry and coolness; and I feel confident in their ability to more than hold their own should the enemy again resort to this method of warfare."

SIR DOUGLAS HAIG, May 19th, 1916:

"The valuable nature of the work performed by the officers of the Central Laboratory and the chemical advisers with the Armies in investigations into the nature of the gases and other new substances used in hostile attacks, and in devising and perfecting means of protecting our troops against them, is deserving of recognition. The efforts of these officers materially contributed to the failure of the Germans in their attack of 19th December, 1915, as well as in the various gas attacks since made."

SIR DOUGLAS HAIG, December 23rd, 1916:

"The employment by the enemy of gas and of liquid flame as weapons of offence compelled us not only to discover ways to protect our troops from their effects, but also to devise means to make use of the same instruments of destruction. Great fertility of invention has been shown, and very great credit is due to the special *personnel* employed for the rapidity and success with which these new arms have been developed and perfected, and for the very great devotion to duty they have displayed in a difficult and dangerous service. The Army owes its thanks to the chemists, physiologists, and physicists of the highest rank who devoted their energies to enabling us to surpass the enemy in the use of a means of warfare which took the civilised world by surprise. Our own experience of the numerous experiments and trials necessary before gas and flame could be used, of the great preparations which had to be made for their manufacture, and of the special training required for the personnel employed, shows that the employment of such methods by the Germans was not the result of a desperate decision, but had been prepared for deliberately.

"Since we have been compelled, in self-defence, to use similar methods, it is satisfactory to be able to record, on the evidence of prisoners, of documents captured, and of our own observation, that the enemy has suffered heavy casualties from our gas attacks, while the means of protection adopted

by us have proved thoroughly effective."

High qualifications were unnecessary for the work of the rank and file, but many very competent men joined, and it may be mentioned incidentally that it was remarked on an early occasion that generally speaking the best qualified chemists proved the best soldiers. The majority of the university graduates and men possessing recognised diplomas, who originally enlisted as corporals, subsequently received commissions, and when the force was more completely organised a considerable number were withdrawn and transferred to the Ministry of Munitions in order that their services might be available in work of a more scientific character.

Mention should also be made of the fact that during the campaign against the rebels in South Africa and the Germans in South-West Africa chemists were attached, on the personal order of General Botha, to the different brigades and rendered valuable service.

From the experience gained in the campaign it is clearly advisable that the State should have control of such an organisation of professional chemists as to ensure at any time their efficient service in the many requirements of the naval, military and air forces. In addition to competent chemical advisers of undoubted standing, the following appear to be essential:—

Chemists to control the manufacture of munitions, explosives, metals, leather, rubber, oils, gases, food, drugs.

Chemists for the analysis of all such materials and for research.

Chemists, on active service, to assist in the control of water supplies, in the detection of poison in streams, in the analysis of water and food, in the disposal of sewage, and in other hygienic matters.

Chemists, both at home amd on active service, to assist in devising safeguards against enemy contrivances of a scientific nature, and methods of offence to meet the same, as well as for the instruction of troops in such matters. It has been called a "chemists' war" and an "engineers' war." Many regard it largely as a conflict between the men of science of the countries engaged. Our chemists have not been dismayed at that, but it is impossible to foresee to what limits beyond accepted tenets the enemy is prepared to go in the application of science to warfare, and we cannot reproach ourselves with having set an example of frightfulness.

To sum the matter up, chemists have met the situation with a spirit of true patriotism and have been promptly organised for the service required of them. It is not too much to hope that, as the discoveries of science have been applied to the destruction of humanity, they may be devoted more and more to the furtherance of the arts of peace, to the uplifting of civilisation and the pacification of the world.

During the war, in spite of the shortage of labour, considerable additions have been made to the large manufacturing concerns throughout the country in the extension of factories, both for the production of things hitherto obtained from abroad and for the requirements of the war.

One important lesson which on no account must be lost sight of is that the country must be self-supporting in all such requirements.

The chemists engaged in connection with the production of materials of war include a large number who were previously occupied in works which have passed under Government control. Most of these were members of the Institute or graduates in science and many were teachers, who thus obtained an insight into operations on a manufacturing scale. If they return to teaching, this experience will have broadened their views; but many will no doubt prefer to remain in industry. Of those with the forces, probably the majority will return to their former work. In any case, many good British chemists should be available for the furtherance of British industry.

FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERVING OR WHO HAVE SERVED WITH H.M. FORCES.

(SUPPLEMENTARY LIST.)

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

FELLOWS.

King, Herbert, Temp. 2nd Lieut. A.O.D. Smith, A. R., 2nd Lieut. A.O.D. Wilson, E. J., R.A.M.C.

STUDENTS.

Brisley, C. W., 2nd Lieut. Irish Guards. Hoff, R. W., Herefordshire Regiment.

Since the publication of the List given in Proceedings, Part IV., 1916, entries have been altered in the following cases:—

FELLOWS.

Blair, R. W., Lieut. R.E.

Claremont, C. L. L., Captain King's Royal Rifle Corps.

Duncan, C. C., Captain A.O.D.

Finnemore, Horace, Staff-Captain, Chemical Adviser, Northern Command. Gemmell, A., Captain.

Harrison, E. F., Lieut.-Colonel R.A.M.C.

Heilbron, I. M., Major A.S.C.

Knight, Leslie, Captain R.F.A.

Law, D. J., Lieut. R.E.

Murphy, Paul, Captain.

Poole, E. S., Captain A.O.D.

Walpole, G. S., Capt. A.I.D.

ASSOCIATES.

Masters, E. A., Major A.S.C. White, J. C., Captain.

STUDENTS.

Bramer, J. D. S., Captain Warwickshire Regiments Bruckman, R. T., Border Regiment. Bull, P. C., D.S.O., Major Suffolk Regiments Chitty, E. C., 2nd Lieut. R. E. Clement, Julian, Captain Hampshire Regiment. Collen, F. D., Captain Notts. and Derby Regiment. Goodwin, S. W., Sergeant University of London O.T.C. Haselhurst, H. W., Major Northumberland Fusiliers. Hatfield, C. G. M., Captain Middlesex Regiment. Henry, John, Captain Royal Scots Fusiliers. Johnson, J. C., Lieut. A.O.C. Lea, H. T., Lieut., Divisional Gas Officer.

Loaring, W. C., Lieut. R.E.

Morrison, Norman, Lieut. King's Liverpool Regiment.

Stephens, H. C., Lieut. R.E.

Ward, E. C., Lieut. A.S.C.

Webster, H. G., Sergeant R.E.

Wilson, D. M., Captain R.E.

Wynn, W. O. R., Sergeant R.E.

The following military distinctions have been noted since those mentioned in Proceedings, Part III., 1916:-

FELLOWS.

Auld, Captain S. J. M., Military Cross. Heilbron, Major I. M., mentioned in despatches. Monier-Williams, Major G. W., Military Cross. Robison, Captain Robert, mentioned in despatches.

STUDENT.

Bull, Major P. C., D.S.O.

CANDIDATE FOR EXAMINATION.

Quibell. Captain A. H., mentioned for Distinguished Service.

Honours.

DR. FRANCIS WATTS, C.M.G.. Imperial Commissioner of Agriculture for the West Indies, and Honorary Corresponding Secretary of the Institute, has been promoted a Knight Commander of the Most Distinguished Order of St. Michael and St. George.

DR HAROLD HART MANN, Agricultural Chemist to the Government of Bombay and Principal of the Agricultural College, Poona, has been awarded the Kaisar-I-Hind Gold Medal.

Obituary.

John Ferguson died at Glasgow on November 2nd, 1916, in his eightieth year. Educated at the High School and the University of Glasgow, he graduated with Honours in Arts, and in 1868 became assistant to Prof. Thomas Anderson, whom he succeeded as Regius Professor of Chemistry in 1874, occupying that Chair until his death. He was the author of many papers on the history and bibliography of chemistry and technology, and of Bibliotheca Chemica—a catalogue of alchemical, chemical and pharmaceutical books in the collection of the late Dr. James Young, of Kelly. He was a Past-President of the Royal Philosophical Society of Glasgow, received the degree of LL.D. from the University of St. Andrews, and was an Honorary Member of the Imperial Military Academy of Medicine, Petrograd. He was an Original Fellow of the Institute, and a Vice-President from 1884 to 1888. At his funeral the Institute was represented by Prof. John Millar Thomson, Past-President.

ROBERT GLEGG died at Aberdeen on December 17th, 1916, in his fifty-second year. The son of a Kincardineshire farmer, he was educated at Dunnottar Public School, Stonehaven, and Gordon's College, Aberdeen, and after some years experience in commercial life attended the University of Aberdeen, taking the degree of B.Sc., with chemistry as his principal subject in 1878. Subsequently he became assistant to Mr. James Hendrick, at that time lecturer in Agricultural Chemistry in the University and Public Analyst for the County of Aberdeen. In 1902 he passed the Final Examination for the Associateship of the Institute and, after three years as Senior Assistant in the laboratory of Prof. Campbell Brown and Mr. W. Collingwood Williams at Liverpool, was elected a Fellow in 1905, when he returned to Aberdeen as University Assistant to Mr.—now Prof.—Hendrick, with whom he remained until his death.

DAVID HOWARD was born at Tottenham on April 3rd, 1839. Descended from Quaker ancestry, he was the son of Robert Howard and grandson of Luke Howard, F.R.S., the meteorologist, original partner with William Allen, F.R.S., the first President of the Pharmaceutical Society, in the firm of Allen and Howard, established in 1797. His mother was a granddaughter of the founder of Lloyds Bank. Educated at Mr. Crabb's school at Southampton, from about 1852 to 1854 and until about 1857 at the Friends' School, Grove House, Tottenham, he proceeded to the College of Chemistry and worked under Hofmann in preparation for joining his father, who was then in control of the works of Messrs. Howard and Kent at Stratford. He became a partner in 1860 and, eventually head of the business, of which he was Chairman of the Board of Directors from the time it was made a limited company in 1903 until his death. He was an Original Fellow of the Institute, a member of the first Council, Treasurer from 1884 to 1903. President from 1903 to 1906, and Vice-President for the three years following. Mr. Howard was thus in office almost continuously for thirty years, taking throughout an active interest in its work. He frequently represented the Institute on deputations to Ministers of State and, during his presidency directed special attention to the question of the training of chemists for practice in industry. At the Annual General Meeting in 1909, shortly before his seventieth birthday, he was presented with an address acknowledging his valuable services. He served subsequently on various Special Committees including the Site and Building Committees. He was also a Censor for several periods and in office as such when he died. He was President of the Society of Chemical Industry, 1886–87; Vice-President of the Chemical Society, 1886–89 and 1903–6; Hon. Member of the Society of Public Analysts; Vice-President and, for some time, Chairman of the Council and Chairman of the Chemical Section of the London Chamber of Commerce; one of the founders of the League which promoted the Act now in operation for the suppression of bribery and corruption; a member of the Chemical Products Committee of the Board of Trade appointed in 1914; and witness before several public Committees and Commissions on such matters as the Merchandise Marks Act, Industrial Alcohol, and Technical Education.

He was an authority on the cinchona alkaloids, the cultivation of cinchona and the chemistry of the cinchona barks, and contributed papers on these subjects to the Journals of the Chemical Society and the Society

of Chemical Industry and the Pharmaceutical Journal.

He was for many years a Deputy Lieutenant for the county of Essex and a Justice of the Peace for West Ham. Living all his life on the borders of Epping Forest, he was a member and for a time President of the Essex Field Club and was well informed in all matters of local antiquarian interest.

He died of heart failure at Snaresbrook on November 14th, 1916, while travelling from his home at Buckhurst Hill to his business at Ilford. He was buried at Buckhurst Hill, the Bishop of Chelmsford and the Suffragan Bishop of Barking officiating with the Rev. Dr. Woodward, rector of the parish. The Institute was represented at the funeral Ly Prof. John Millar Thomson, Past-President, and the Registrar.

THOMAS PURDIE, an Original Fellow of the Institute, was born on January 27th, 1843, at Biggar, Lanarkshire, and was the son of James Purdie, writer and banker in that Burgh. Educated at Edinburgh Academy, he spent seven years in South America before commencing his training under Frankland at the Royal School of Mines, where he obtained the diploma of A.R.S.M. in 1875 and was Demonstrator for several years, subsequently graduating as B.Sc. in the University of London in 1879. He also worked under Wislicenus at Würzburg, where he took the degree of Ph.D. He was Science Master at the Science School, Newcastle, Staffs., from 1881 to 1883, and after acting for a while as Assistant to Prof. Heddle, succeeded him as Professor of Chemistry in the United College of the University of St. Andrews in 1884. He occupied that Chair until 1909, and before his retirement founded and endowed at his own cost a research laboratory in the University. He published many researches in the Journal of the Chemical Society and was elected a Fellow of the Royal Society in 1895, was a Vice-President of the Chemical Society from 1899 to 1902, received the degree of LL.D. from the Universities of Aberdeen and St. Andrews. He died at St. Andrews on December 4th, 1916, at the age of seventy-four years.

Charles Umney, an Original Fellow of the Institute, died at Bournemouth on November 23rd, 1916, in his seventy-fifth year. He was a Bell Scholar at the School of the Pharmaceutical Society in 1862 and occupied for a time the position of manager of Thomas Herring's Pharmaceutical Laboratories in Aldersgate Street; he then joined the firm since known as Wright, Layman and Umney, of which he became the active principal and remained so until the business was converted into a limited liability company. He contributed addresses and papers to the British Pharmaceutical Conference and the pharmaceutical press.

The Register.

Since the publication of Proceedings, Part IV., in November, 1916, the Council have elected 5 new Fellows and 5 new Associates; 16 Associates have been elected to the Fellowship, and 24 Students have been admitted.

The deaths of 7 Fellows have been reported.

New Fellows.

Carmichael, John Fisher, B.Sc. (Vict.), 736, Tower Building, Liverpool. Lennox, Robert Nicol, Morvah, Hartington Road, Chiswick, London, W. Levinstein, Herbert, M.Sc. (Vict.), Ph.D. (Zürich), Newlands, Broughton Park, Manchester.

Sageman, Philip John, 65, Anson Road, Tufnell Park, London, N. Smiles, Samuel, D.Sc. (Lond.), The Quarry, Sanderstead Road, Sanderstead, Surrey.

Associates Elected to the Fellowship.

Bainbridge, James Scott, B.Sc. (Leeds), Ravensworth, Richmond, Yorks.
Brady, Oscar Lisle, B.A. (Cape of Good Hope), D.Sc. (Lond.), D.I.C.,
10, Blendon Terrace, Plumstead, London, S.E.

Campbell, Bertram, B.Sc. (Lond.), D.I.C., Glebelands, North Farnborough, Hants.

Crabtree, James, M.Sc. (Vict.), Woburn Experimental Farm, Apsley Guise, S.O., Bedfordshire.

Davidson, Alexander Lindon, The Retreat, Stapenhill, Burton-on-Trent. Griffiths, Richard Elliott, B.Sc. (Lond.), 20, Baldwyn Gardens, Acton,

London, W. Harrison, Thomas Weatherill, B.Sc. (Lond.), 18, Elfindale Road, Herne Hill, London, S.E.

Hollely, William Francis, 67, Ross Road, Wallington, Surrey.

Honneyman, William, 8, Gladstone Street, Hartlepool.

Hulton, Henry Francis Everard, 15, Oakhill Court, East Putney, London, S.W.

Lucking, Hubert Leslie, Ph.D. (Heidelberg), Hardwick, Garrick Avenue, Golder's Green, London, N.W.

Marsden, Ernest, 46, Talbot Street, Moss Side, Manchester.

Pickard, Joseph Allen, B.Sc., A.R.C.S. (Lond.), 21, Rosemont Road, Acton, London, W.

Roberts, Oswald Digby, Highlands, Streatham Common, London, S.W.

Smith, Ernest William, B.A., B.Sc. (Lond.), Central Chemical Laboratory, Dornock, near Annan, Scotland.

Watts, Hugh Edmund, Ph.D. (Zürich), B.Sc. (Lond.), Gordon House, Hutton, Essex.

New Associates.

Havthornthwaite, Alan, B.Sc., A.R.C.S. (Lond.), 79, West Side, Clapham Common, London, S.W.

Ingham, John William, B.Sc. (Lond.), Grange Avenue, Beeston, Notts.

Mardles, Ernest Walter John, B.Sc. (Lond.), 24, R.F.C. Villas, Lynchford Road, South Farnborough, Hants.

Paul, Ernest, B.Sc. (Lond.), 96, Ravenhurst Road, Harborne, Birmingham. Zilva, Sylvester Solomon, Ph.D. (Giessen), Lister Institute of Preventive Medicine, Chelsea Gardens, London, S.W.

New Students.

Atkinson, Samuel Comber, B.Sc. (Lond.), 29, Gatling Road, Plumstead, London, S.E.

Beck, Clarence Walker, Moorville, The Avenue, Roundhay, Leeds.

Benstead, Thomas Bruce, Plomont, Grovehall Drive, Beeston, Leeds.

Bentley, Thomas Leslie James, 5, Fairlawn Road, Wimbledon, London, S.W.

Causer, Laurence William, 123, Ordnance Road, Enfield Wash, London, N.

Cooke, Francis Cyril, 16, Homefield Road, Wimbledon, London, S.W.

Craven, William Henry, B.Sc. (Lond.), 44, Melton Road, W. Bridgford, Nottingham.

Dickie, William Alexander, 12A, Hythe Street, Dartford, Kent.

Dixon, Bertram Eastwood, 4, Gunton Avenue, Clapton, London, N.E.

Drummond, Arthur Johnstone, 4, Grantly Gardens, Shawlands, Glasgow.

Farrer, William John Gladstone, I, Prince's Parade, Church End, Finchley, London, N.

Ferguson, John, 15, Dean Crescent, Stirling, Scotland.

Ferrier, George Straton, 10, Hamilton Park Terrace, Hillhead, Glasgow.

Gold, Arthur Kempton, IA, Lysia Street, Fulham, London, S.W.

Goodall, George Forrest, 133, Kenilworth Avenue, Shawlands, Glasgow.

Greenberg, Solomon, 41, Frithville Gardens, Uxbridge Road, London, W.

Hemmings, William George, Kingsley, Friern Lane, New Southgate, London, N.

Hind, Stanley Reginald, Oxford House, West Park, Chesterfield, Derby.

Jones, Leo Francis, St. Elmo, Caerleon, Mon.
Ridyard, Herbert Norman, 59, Holywell Hill, St. Albans, Herts.
Scarf, Frank, 51, High Street, Harborne, Birmingham.
Southerton, Leslie Charles, 128, Golden Hillock Road, Small Heath, Birmingham.

Williams, Ewart Harrod, 31, Thornsbeach Road, Catford, London, S.E.

DEATHS. Fellows.

Davis, Henry Wilson.
Glegg, Robert, B.Sc. (Aberd.).
Haydock, Arthur Geoffrey.
Koningh, Leonard de.
Miller, Norman Harry John, Ph.D. (Würzburg).
Purdie, Prof. Thomas, Hon. LL.D. (Aberd.), F.R.S.
Umney, Charles.

Horton, Laurence, 259, Ellesmere Road, Sheffield.

Change of Name.

ASSOCIATE.

Schultz, Arthur William, A.C.G.I., to Scott.

General Notices.

Examinations.—The Council give notice that examinations will be suspended until further notice. In the event of a sufficient number of Candidates wishing to present themselves in July, the Council will reconsider the question. Candidates who desire to present themselves for examination in July are requested to communicate with the Registrar.

Examinations in Biological Chemistry.—An Examination in Biological Chemistry, Bacteriology, Fermentation, and Enzyme Action will be held in October, 1917.

Notice to Associates.—Associates elected prior to February, 1914, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry, for at least three years since their election to the Associateship, may obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in making known suitable appointments for professional chemists.

The Laboratories.—The Laboratories of the Institute of Chemistry are available for the use of other Institutions for Examination Purposes, on terms to be obtained from the Registrar.

The Library.—The Library is open for the use of Fellows, Associates, and Registered Students, between the hours of IO A.M. and 6 P.M. on week-days (Saturdays: IO A.M. to 2 P.M.), except when Examinations are being held.

The Regulations.—The Council request that all Fellows and Associates who wish to express their views on the proposed alterations in the Regulations for admission to the Institute, notified in a circular dated November 28th, and published in Proceedings, Part IV., 1916, will communicate with the Registrar before March 1st next.

Association of British Chemical Manufacturers.— This Association has been formed to promote the co-operation of British manufacturers in the organisation and development of chemical and closely allied industries.

Particulars of the Association are obtainable from Sir Charles Bedford, D.Sc., General Secretary, Association of British Chemical Manufacturers, 166, Piccadilly, London, W.

The Society of Glass Technology.—The objects of the Society are (a) the association of persons interested in glass technology, and (b) the general advancement of the study and practice of glass technology. The Society will consist of Collective Members (firms engaged in the manufacture, distribution and use of glass), Ordinary Members (not being either representatives of Collective Members or Student Members) who are interested in glass technology, and Student Members (registered students who are attending a course of technical instruction). The Society arranges meetings to discuss papers of interest to the glass industry and will publish a journal.

Further particulars can be obtained from Dr. W. E. S. Turner, Department of Glass Technology, The University, Sheffield

Beit Fellowships for Scientific Research.—The fifth election of Beit Fellows will take place on or about July 15th, 1917. Not more than three Fellowships will be awarded. Applications must be received on or before April 16th, 1917. Forms of application and further information may be obtained, by letter addressed to the Rector, Imperial College of Science and Technology, South Kensington, London, S.W.

THE

INSTITUTE OF CHEMISTRY

GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

PROCEEDINGS,

1917.

PART II.

OFFICERS, COUNCIL AND COMMITTEES, 1917=8.
ANNUAL GENERAL MEETING, MARCH 1st, 1917.
THE ADDRESS OF THE PRESIDENT:

SIR JAMES J. DOBBIE, LL.D., D.Sc., F.R.S. PROCEEDINGS OF THE COUNCIL (FEBRUARY—MARCH, 1917). OBITUARY.

THE LIBRARY.

MEMBERS AND STUDENTS WITH THE FORCES. CHANGES IN THE REGISTER. NOTICES.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary.

30, Russell Square, London, W.C. 1.
April, 1917.

LIST OF OFFICERS AND COUNCIL

For the Year ending March 1st, 1918.

PRESIDENT:

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CHARLES FREDERICK CROSS, B.Sc., F.R.S.
MARTIN ONSLOW FORSTER, D.Sc., F.R.S.
ARTHUR HARDEN, D.Sc., F.R.S.
OTTO HEHNER.
HERBERT JACKSON, F.R.S.

HON. TREASURER:

ALFRED GORDON SALAMON, A.R.S.M.

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HAROLD GOVETT COLMAN, Ph.D., M.Sc.
ARTHUR WILLIAM CROSSLEY, LT.-COL., D.Sc., Ph.D., F.R.S.

Examiners for the Final Examination:

- (a) Mineral Chemistry: GEORGE NEVILL HUNTLY, B.Sc., A.R.C.S.
- (b) Metallurgical Chemistry: CECIL HENRY DESCH, Ph.D., D.Sc.
- (c) Physical Chemistry: FREDERICK GEORGE DONNAN, M.A., Ph.D., F.R.S.
- (d) Organic Chemistry: WILLIAM JACKSON POPE, M.A., F.R.S.
- (e) The Chemistry (and Microscopy) of Food and Drugs, Fertilisers and Feeding Stuffs, Soils and Water: BERNARD DYER, D.Sc.,
 Therapeutics, Pharmacology and Microscopy: FREDERICK

GOWLAND HOPKINS, D.Sc., M.B., F.R.S.

(f) Biological Chemistry, Bacteriology, Fermentation and Enzyme Action: ALFRED CHASTON CHAPMAN.

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REGISTRAR AND SECRETARY: RICHARD BERTRAM PILCHER.

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^{*} CHAIRMAN.

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THE HON. TREASURER AND FINANCE COMMITTEE.

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^{*} CHAIRMAN.

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^{*} CHAIRMAN.

[†] VICE-CHAIRMAN.

THIRTY-NINTH ANNUAL GENERAL MEETING.

THURSDAY, MARCH 1st, 1917.

THE Thirty - ninth Annual General Meeting of the Institute of Chemistry of Great Britain and Ireland was held at 30, Russell Square, London, W.C., on Thursday, March 1st, 1917, at 4.30 p.m.; Sir James J. Dobbie, President, in the Chair.

The minutes of the Thirty-eighth Annual General Meeting having been read and confirmed, Mr. A. Gordon Salamon, Honorary Treasurer, moved—"That the Financial Statements for the year 1916 be received and adopted, and that a vote of thanks be accorded to the Honorary Auditors for their services."

The Treasurer said that he thought the Report of the Council and the accounts published in the Proceedings afforded a frank statement of the financial position of the Institute which, in all the circumstances, was more satisfactory than a year ago. Beyond the comments made in the Report little remained to be said, except to direct attention to the fact that the expenditure had been kept within the income and the loan from the Bank considerably reduced. The Fellows and Associates would realise that the Institute had acquired premises for nearly a century and not only for its present purposes. For a time no doubt it would be found necessary to exercise economy, but in due course the Council would extend the work of the Institute, particularly by the

development of the Lecture Scheme, the improvement of the Library, and the printing of the lectures and publications.

Mr. Walter F. Reid seconded, remarking that the thanks of the Members were due to the Honorary Treasurer and Finance Committee for their management of the financial affairs of the Institute and to the Honorary Auditors for their care in confirming the accounts, which he knew from personal

experience was no light task.

Replying to questions raised by Mr. E. W. Voelcker, the Treasurer said that the holding of the Institute in Canada $3\frac{1}{2}$ per cent. Registered Stock had been lent to the Treasury and the Council had dealt with the investments on reliable advice. To reduce the loan with the Bank, the War Loan Stock had been sold in preference to other securities, because it could be realised at small loss, whereas the other investments—though, as Mr. Voelcker had indicated, carrying a lower rate of interest—could not be realised except at considerable loss, and the £3,000 Victoria 4 per cent. Stock would be redeemable at par at an early date.

The motion was put to the meeting and carried nem. con.

Mr. John Spiller moved: "That the Report of Council be received and adopted."

Mr. Spiller remarked that, as an Original Fellow, it gave him great pleasure to see the Institute established in its new premises. He had entered the Royal College of Chemistry as a student in 1848 and the science and profession of chemistry had made remarkable strides in his time. He had watched the progress of the Institute in recent years with great satisfaction, and he was glad to be present at the Annual General Meeting and to move the adoption of the Report.

Mr. A. Chaston Chapman, in seconding, said that if the people of this country were at last beginning to understand what professional chemistry meant and were beginning to recognise the importance of chemistry as one of the foundation stones of our national progress, and even of our future national existence, he felt that it was in no small degree due to the very valuable and admirable spade-work which the Institute of Chemistry had been doing for so many years. There were, unfortunately, persons in high places who could not or would not appreciate the value to the community of scientific work, and he regretted to note that a former Lord of the Admiralty, in the House of Commons, had recently referred to the Admiralty Board of Inventions and Research as a "chemist's shop," though it was true that Sir Edward Carson, the present First Lord, subsequently administered to him a well-deserved rebuke. As professional chemists, they could not be too grateful to the Institute for all that it had done, and he would like to congratulate the Council warmly on the work referred to in the Report.

Mr. C. Sordes Ellis rose to make some remarks with reference to the proposed new Regulations, but the President said that the matter was not before the Meeting; the Council had invited the opinions of the Fellows and Associates on the new scheme, to which they would give very careful consideration in the ensuing session.

Sir William Tilden, speaking in support of the motion, referred to the need for economy and inquired what policy the Council pursued in the development of the Library, to which they devoted an annual grant of £25.

The President replied that the grant was mainly expended on journals and binding, though books of reference were purchased on the advice of the Examiners in the interest of candidates for examination. The Library Committee had little work to do in recent years as, owing to the raising of the Building Fund, the Council could scarcely appeal for donations to the Library.

The motion was then put to the Meeting and the Report was received and adopted.

Mr. J. A. Goodson and Mr. Edward Jones were appointed scrutineers to examine the voting papers for the election of Officers and Members of Council, and to report the result of the ballot for the election of Censors.

Lieut.-Col. Edward Frank Harrison and Mr. George Cecil Jones were reappointed Honorary Auditors, and the vacancy caused by the retirement of Mr. Herbert F. Stephenson was filled by the appointment of Dr. Leonard Temple Thorne.

The President having delivered his address (see p. 13), it was moved by Sir William Tilden, seconded by Dr. George McGowan, and resolved: "That the thanks of the Fellows and Associates be accorded to the President for his Address, and that he be asked to allow it to be printed in the Proceed-

ings of the Institute."

Sir William Tilden said that the Fellows were deeply indebted to the President for his interesting and valuable Address, and especially for his services to the Institute under circumstances unparalleled in its history. The Fellows and Associates appreciated gratefully the attention and care which the Report showed that he, though head of an important Public Department and a member of innumerable Government Committees, had given to the affairs of the Institute. Sir William personally felt that he was much indebted for the Address and hoped to read it again in print. Some of the subjects dealt with were controversial and required time to think over. He agreed with a great deal of what had been said on the subject of general education. The future chemist must be educated on such broad lines that he must be recognised by the members of other professions as an educated man. His position depended largely on social influence, as well as on professional qualifications. Education should be directed to the development of character, and every endeavour must be made to put the right individual in the right place. Parents and guardians were too apt to attempt to force their children into careers for which they were not fitted. He sympathised with the coming generation of chemical students on the greatly increased field of work they had to cover. In his day, students had one text book on chemistry and physics and one on analysis. The course

at the Royal College of Chemistry consisted of qualitative analysis in the first year, quantitative analysis in the second year, and in the third students were at once plunged into research. Chemistry had now expanded enormously and overlapped other sciences to such an extent that it was evident the ground could not be covered in the conventional three years. Referring to the training for chemical engineers, it seemed to him that great care would have to be taken lest with the additional subjects the chemical student lost sight of his chemistry. He realised the importance of physics and physical chemistry, recalling the remark of Guthrie that chemistry was only the dirty part of physics, and it was obvious that, as the President had said, the time allotted to the course must be expanded. In an address to the British Association so long as thirty years ago he had expressed the opinion that five years' study was necessary to make a chemist, but this had only brought down ridicule, especially from the medical papers. Times, however, were now changed.

Dr. McGowan in seconding the vote of thanks complimented the President on the Address, which he hoped to see and to study in print. He was especially touched by the reference to Sir William Ramsay, of whom the President had succeeded in giving a wonderfully full and vivid portrait within the limits of a few sentences. The speaker himself had been one of Ramsay's first students, in the early seventies, and they had continued friends ever after. With regard to the President's remarks on the training of chemists for industry, he hoped that our young chemists would not acquire the idea that they were also going to be made into fully-equipped engineers, as was sometimes the case with engineers who apparently thought that they were also chemists.

The motion was put to the meeting by Sir William Tilden and carried unanimously.

The President in the course of his reply said that he would like to assure the Members that the new Regulations

would not be adopted in a hurry or in defiance of the views of those who might be taken to represent the feeling of the general body of the Institute. The Council had no desire to act except in sympathy with the Members.

The following were elected Censors: Sir George Beilby, Mr. Edward Bevan, Prof. Percy F. Frankland, and Mr. E. W. Voelcker.

The Officers and Council for the year ending March 1st, 1918, were declared elected (p. 2).

On the motion of Mr. J. H. Coste, seconded by Mr. James Connah, a vote of thanks was accorded to the retiring Officers and Members of Council for their services.

The President declared the meeting dissolved.

The President's Address:

SIR JAMES J. DOBBHE, LL D., D.Sc., FRS.

MARCH 1st, 1917.

The Report of the Council which you have just received contains a record of our domestic affairs since we held our last annual meeting, and in the Sections on "Professional Chemistry and the War" and "Glass Research" you will find an account, but necessarily an incomplete one, of the special work which the Institute has been doing in connection with the war. At some future time when the occasion for reticence shall have passed away the importance of the part which the Institute has played in assisting public departments and private firms engaged on Government work to obtain the chemical service they required will, I feel sure, be fully recognised. In this matter the Institute has really acted as a clearing house, a function which it might with great advantage continue to perform permanently. The Registrar has given himself whole-heartedly to this work, and his selfdenying and unostentatious devotion to it are deserving of our warmest appreciation.

In spite of the heavy losses which we have suffered in the course of the year our numbers have been maintained and even slightly increased.

The death-roll contains the names of ten members and students who died on active service. For the present we have recorded the fact with a simple expression of regret, but I desire on behalf of the Council to say that it is intended when the proper time comes to ask you to creet a suitable memorial to them in this place.

Among others who have passed away the name of William Ramsay stands pre-eminent. An original Fellow of the Institute, he served the offices of Member of Council, Vice-President, and Censor. He took great interest in its work, more especially in its efforts to secure to the chemist honourable recognition and adequate recompense for his services, and he was ready at all times to lend the weight of his influence and to afford his active support to the measures which the Council took to further these ends. The grief which we feel for the loss of so staunch a professional colleague is swallowed up in that larger grief which we share with the whole world of science over the untimely death of one of its brightest ornaments and most honoured members.

Ramsay was a native of Glasgow, and although the discoveries which brought him fame and have left so deep a mark on the science of our time were not made until after his removal to England, it was in the laboratory of Glasgow University that he carried out the researches which first gave evidence of the possession of those powers which won for him the high place he holds amongst scientific men.

The story of the discovery of argon, helium, and the other rare gases of the atmosphere fills one of the most fascinating chapters in the history of modern chemistry. The opportunity of sharing with Lord Rayleigh the honour of the first of these discoveries was given to every chemist in this country; Ramsay alone was able to take advantage of it. To the long series of investigations which followed, he brought not only a scientific mind of the first order, but powers of manipulation so delicate that he was able to measure, to weigh, and to determine the physical constants of quantities of gas so minute that they lie altogether outside the range of the ordinary experimenter. The secret of his success lay in his faculty for discerning new directions in which known methods and principles could be applied, in the courage and confidence with which he attacked problems from which men gifted with less imagination or scientific insight shrank as hopeless or were deterred from attempting by fear of ridicule, and in the inexhaustible patience and assiduity with which he followed up a clue once obtained. At all stages of his career he surrounded himself with eager and devoted assistants, who were attached to him by the charm of his personality no less than by his power of inspiring others with his own enthusiasm. The human element was strong in him, and even in the most absorbing moments of his career he never allowed his interest in his work to overmaster his interest in his fellowworkers. His wide sympathy, simplicity of character and frankness of manner won him friends everywhere. He was known personally to scientific men all over the world, with many of whom—for he had a great gift of languages—he carried on a correspondence which alone would have taxed the energies of any ordinary man.

Success left him entirely unspoiled. When honours were being showered upon him he usually received the congratulations of his friends with the remark that he had been extraordinarily lucky. Luck, in his case, meant genius combined with the capacity for strenuous and sustained effort which alone can make genius fruitful.

John Ferguson, of Glasgow University, the professor of chemistry under whom Ramsay began his career as a teacher, survived his brilliant assistant only by a few months. A man of wide learning and many accomplishments, and an excellent lecturer, it used to be said of him that there was no Chair in the Arts or Science Faculty of his University which he could not on occasion have filled. But his real interests were in the past history rather than in the modern developments of chemical science, and he was as much at home in the Reading Room of the British Museum as in his Laboratory at Gilmorehill. His study of alchemy was profound, and bore fruit in many interesting memoirs, but above all in his "Bibliotheca Chemica," a catalogue of the alchemical books in the collection of James Young, of Kelly. This work, the result of many years' laborious research, is not only a masterpiece of the art of bibliography, but a great storehouse of information regarding the alchemists and their writings.

The name of yet another well-known Scottish chemist, Professor Thomas Purdie, of St. Andrews, appears in the obituary of the year. Purdie filled his Chair with great distinction, and not only made valuable additions to our knowledge of organic chemistry, but established a vigorous school which continues to produce much excellent work under his successor, Professor Irvine. His munificence in building and equipping a Research Laboratory in the University of St. Andrews at his own expense constitutes a further claim upon the gratitude of all who are solicitous for the advancement of chemical science.

By the death of David Howard we have been deprived of one of our Past Presidents and most esteemed members. An original Fellow of the Institute, he occupied in succession nearly every one of its offices, and by his zeal and enthusiasm in its behalf contributed largely to its present important position. He was a man of high aims and sterling character, firm of purpose and sound in judgment. His interests were so widespread that it would be no easy task to draw together the threads of his busy life. He was not only a chemist, but a naturalist, an antiquary, and, above all, a man of affairs. As Deputy Lieutenant of his County and a Justice of the Peace he gave freely of his time to the service of his country. He died as he wished, in harness, full of years and honoured among men.

We have also to deplore the loss of John Angell, a pioneer of science-teaching in schools; John Brock, Chairman of the United Alkali Company; Arthur John Dickinson, one of the earliest chemists engaged in the distillation of coal tar; Cornelius Hanbury, of Messrs. Allen & Hanbury; Edmund George McBretney, a chemist of long experience in the application of scientific principles to the technology of glass manufacture; Charles Unney, of Messrs. Wright, Layman, & Unney; Edward Whitfield Wheelwright, chemist to Messrs. Albright & Wilson; Henry Wilson Davis, late Deputy Principal of the Government Laboratory; Edward Jackson, one of the Inspectors under the Alkali Works Regulations Act;

George Duncan Macdougald and Frederick Wallis Stoddart, Public Analysts, and Bedford McNeill, chemist and mining engineer, who was a member of our Council at the time of his death.

Our financial position is fully set forth in the Report of the Council and accompanying statement of accounts, and I only refer to it now for the purpose of expressing our gratitude to those who have so generously assisted us with our Building Fund either by contributing to it or by inducing others to do so. The sum of £1,294 received in the course of the year was no inconsiderable amount to raise under existing circumstances. We still require £2,250 to clear off liabilities already incurred and to complete the equipment of the building. I venture to express the hope that the efforts which have proved so fruitful in the past will be continued, and that the end of the year on which we enter to-day will find us nearer the fulfilment of this task. With regard to our general financial position, I think you will agree with me that we have reason to be grateful to the Hon. Treasurer and the Finance Committee for the success with which they have so far piloted us through a period of some difficulty and anxiety.

The work of the Glass Research Committee has been carried on with energy and success, and has been developed in directions not contemplated in our original programme, in order to meet urgent requirements mainly connected with the war. One paragraph in the Report relating to this Committee will, I am sure, have given pleasure to you all—I refer to the well-earned expression of appreciation by the President of the Board of Trade of the great services rendered to the glass industry by our Vice-President, Professor Jackson.

The question of the revision of the Regulations for admission to the Associateship and Fellowship, with the object of strengthening the position of the Institute and rendering it more thoroughly representative of the profession, is receiving

the careful attention of the Council. They feel that this matter should be decided with as little delay as possible and have, therefore, issued a circular letter to the members inviting their views on the new proposals. Naturally, in the answers which the letter has drawn forth there is considerable difference of opinion. I purposely refrain from dealing with the views expressed because one of the first duties of the new Council will be the adjustment of the scheme with special reference to the criticisms received.

The events of the past year have served to emphasise still further the responsibilities of the Institute in connection with the education of the chemist. The war has given an enormous impetus not only to existing chemical industries, but to the nvestigation of problems, formerly almost entirely neglected in this country, with a view to the establishment of new industries. The time has not yet come when a full statement on this subject is permissible, but many of the facts are common knowledge. The necessity for husbanding our food supplies, for example, has been brought home to us all by the recent action of the Food Controller. This necessity has compelled us to look closely into the question of the relative values of different foods, and to the functions they fulfil in nutrition. It has also obliged us to consider how far alcohol and other substances produced from cereals might be obtained from other sources. The food question in turn has raised that of fertilisers. The impossibility of drawing supplies of potash from the usual source has once more directed attention to the large stores of this substance locked up in our felspars, and has led to renewed attempts to render them available for the use of the farmer. Again, the interruption of the importation of nitrate of soda and the consequent increase in the demand for sulphate of ammonia for agriculture, to say nothing of the demands for other purposes, have compelled attention to the possibility of utilising our coal to greater advantage as a source of ammonia, and also to the various processes for the direct synthesis of ammonia and nitric acid. The enormously increased consumption of sulphuric acid has also rendered necessary the close examination of other methods than those hitherto in common use for fixing ammonia and for bringing mineral phosphate into the soluble form. All these problems belonging to one corner of the field of industrial chemistry are under discussion at the present time and are, most of them, the subject of actual experimental investigation. Industries entirely new to this country will spring out of them, and we have a well-founded expectation that such industries, born of war conditions, will not be allowed to perish when peace returns.

It may be anticipated, then, that in future there will be a greatly increased demand for chemists competent to set going and control industrial concerns, and it is important to inquire whether the facilities at present provided for their training are adequate. So far as pure chemistry is concerned the curriculum of many of our colleges and universities may be regarded as fairly complete. But is that sufficient? Is the curriculum wide enough for those who propose, or who come through force of circumstances, to make industrial chemistry their business in life? The discussions that have taken place lately on the relations between chemistry and engineering mark an important development of the current criticism of the educational system of the country in relation to the industrial position. In a weighty article which appeared in the Times Engineering Supplement last July, Professor Donnan pointed out that at the present time no means exist whereby the student of chemistry can obtain the training necessary to enable him to translate the pure science of the laboratory into the industrial process of the works. For long this problem appeared to be insoluble, but our ideas on the subject are gradually becoming more clearly defined. We realise now that, except in a few special cases, it is futile to attempt to give instruction in the processes of particular industries in college classrooms and laboratories, and that what we should aim at is instruction in the principles and methods which find application in chemical industries generally The establishment of these principles has only become possible in recent times through the growth of physical chemistry. In order that they may be applied with success in the chemical industries, Professor Doman, after a thorough analysis of the whole position, shows that three things are required, namely, physical chemistry, applied physical chemistry, and ordinary mechanical engineering. Applied physical chemistry, as he defines it, stands in the same relation to physical chemistry as mechanical engineering does to physics, and the laboratory of applied physical chemistry should be "a place in which the general principles underlying the design, construction, testing, and control of chemical plant and processes would be taught."

The industrial chemist, then, according to this view, must be trained in physical and applied physical chemistry. and must have sufficient acquaintance with the principles and methods of engineering science to be able to co-operate effectively with the engineer. It may be asked what provision exists for giving the required training in physical chemistry and applied physical chemistry. As regards the former a fairly satisfactory answer can be given. Few of our colleges are now without special provision for instruction in physical chemistry, and it is only necessary that this provision should be extended and that a more prominent place should be assigned to the subject in the curriculum. But as regards applied physical chemistry there is a great gap in our system. No course of instruction exists at present in which the application of the principles of physical chemistry to manufacturing processes is systematically taught. The laboratory of applied chemistry in the Royal Technical College, Glasgow, which is equipped with apparatus designed to illustrate the operations in common use in chemical works, is probably the nearest approach we have to a laboratory of applied physical chemistry of the type required. The University of London, however, has now under consideration the inclusion of what would be equivalent to a course in applied physical chemistry in the curriculum for the B.Sc. degree.

If such a course is actually instituted the natural corollary will be the equipment of a suitable laboratory in which the practical instruction can be given, so that we may hope to see soon what is undoubtedly a grave defect in our educational equipment for teaching applied chemistry remedied so far as the metropolis is concerned.

It is not suggested in all this that the chemist should become an engineer. The professions are distinct, and it is rare to find a high degree of aptitude for both united in the same individual. What is important for the chemist is that he should have sufficient knowledge of engineering to be able to make his requirements known to the engineer and to collaborate effectively with him in the design and control of the plant required to carry out any particular series of operations. There will always be need in chemical works for the engineer who on his side has devoted special attention to chemistry.

What is the position of the Institute with reference to this matter? Our Charter rightly insists on a knowledge of physics as essential to a properly trained chemist, and our Regulations set forth the courses which the Council have prescribed to meet this requirement. For many years, moreover, the Council have advocated the study of higher physics by chemists who intend to practise in industry. But in view of recent developments the time cannot be far distant when it will be necessary to consider whether attendance at a fuller course of physics should not be prescribed and further steps taken towards the more complete bridging of the gap between theory and practice. One of the difficulties is the time-table. It is hardly possible to add to the number of subjects at present included in a three years' course of study, without either prejudicing the subjects already included or imposing too severe a strain upon the student. It is only by extending the ordinary course of study by the addition of a fourth year that time can be found for new subjects or for the more thorough study of the existing subjects which the exacting requirements of the present day conditions demand.

But it may be said that while a knowledge of chemical engineering might be a valuable qualification for a works chemist or a works manager it would be of little use to a public analyst or to a research chemist. True, but the following considerations deserve the attention of all students. If everyone could foresee his future career there are things which perhaps he might omit from his professional training, the omission of which, while his future is hidden from him, might be fatal to his advancement. Of those who take up chemistry as a profession some become eventually analysts, others consulting chemists, others research chemists, others teachers, and others works chemists and managers. The man who becomes an analyst and remains an analyst can get along very well without qualifications which are absolutely necessary to the works manager, and conversely the works manager can dispense with much, say, of the detailed knowledge of analysis which is essential to the analyst. But has the profession attained such a degree of specialisation that it is safe for the student to train exclusively with reference to only one of the branches I have enumerated? At any rate by doing so he greatly limits the field within which promotion is afterwards open to him. What I want to lay stress upon is this, that his chance of finding the career in which he can be most useful and the one which offers him the widest scope for his abilities and the best opportunities of promotion must be greatly impaired if he omits to qualify himself in such a manner that he is fit, so far as education can fit him, to enter upon a career in any branch of chemistry. Speaking from my own experience I have no hesitation whatever in saying that the training of many of our young chemists at the present time is too narrow. This, I believe, is the real explanation of the fact that the chemist is frequently relegated to a subordinate position when he ought to be in control. Take the case of the gasworks. The distillation of coal is essentially a chemical industry, but how many gas works are managed by chemists? With wider qualifications, especially in the direction with which I have more particularly been dealing, the rising generation of chemists would be able to play their proper part in the new industries which are springing up in all directions and to occupy positions from which they are at present excluded.

It may appear that I am advocating a course which would tend to dissipate the energies of the student and prevent concentration upon the subjects essential to his profession. That is far from my intention. No proficiency in subsidiary or extraneous subjects can possibly compensate for defective knowledge of chemistry and physics. But I am equally certain that in a profession which is concerned with so many interests the man of wide education and qualifications alone can hope to command success.

Apart from questions of professional training, we as an Institute are concerned with the general education of candidates for our Membership, and are therefore directly interested in the reform of the school curriculum which is exciting so much attention at the present time. The question is of enormous importance and the decisions arrived at are likely to influence the whole course of education in this country, for good or for evil, for many years to come. That must be my apology for troubling you with some remarks on the subject this afternoon.

If asked individually what sort of school education we think best suited for a boy who in after-life is to adopt chemistry as his profession, there would probably be considerable diversity in our answers. Some might advocate that from an early period he should be taught with special reference to his future calling, that, to use the term in fashion at present, his education should be "vocational." But this view would probably find few supporters, because it is open to the obvious objection that it would force the choice of a profession at an age when, in most cases, a boy's natural bent, if he has any, has not yet asserted itself. Others, and possibly a greater number might declare for an education in which science played a large, perhaps the predominant part. But probably

the majority would answer that his education should be on the same lines and in the same subjects as for any other profession or calling.

The question now arises—what should these subjects be? The aim of education on its intellectual, as distinguished from its moral and physical sides, is the evenly-balanced training of all the faculties of the mind. This aim, I venture to think, can never be attained by the study of science exclusively on the one hand, or of the subjects commonly classed as the humanities, on the other. Both are essential. While, therefore, we do not think that the school training of the chemist should be differentiated in any way, at any rate in its earlier stages, from that of the lawyer, the doctor, or the engineer, we think that that training should in all cases include science. To secure this it is obvious that a great change in our whole system of education is necessary.

Throughout the past year the controversy over the place of science in general education has been waged unceasingly. It would not be correct to say that any very definite conclusions have so far been reached, but progress has been made and now a greater spirit of moderation prevails. The manifestoes issued on either side admit the claims of the other to such an extent that one is tempted to exclaim in the words of a famous despatch: "Your objects are the same." Let us hope when it is attempted to realise these objects by a definitive treaty of peace that the apparent identity of aims may not prove illusory.

The idea that there is or can be any real antagonism between science and the humanities is of course an absurdity. When the history of education in this country during the latter part of the nineteenth and earlier part of the present century comes to be written, nothing will excite the wonder of the historian more or prove more difficult to explain than the unsympathetic attitude of scholars towards science and of scientific men towards scholarship which has too often marked the period. This attitude is undoubtedly bound up with our peculiar University and Public School System on

the one hand, and with the growth of specialisation in science on the other, but it has been accentuated by the party system which pervades our whole public life. When we go back a little what do we find? Not that the scholars were the enemies, but that they were the authors and promoters of scientific inquiry. Take the period of the foundation of the Royal Society. We meet then with such names as those of Barrow, Sprat, Wilkins, and Ray, to mention but a few—all theologians, all scholars, all men whose names are intimately identified with the great scientific movement of the time. These men looked on knowledge as a whole and recognised that the study of nature is no less necessary than the study of literature, philosophy, and theology to a right understanding of man's place and purpose in creation.

But in process of time, as the body of scientific facts and principles accumulated, it was no longer possible for one man to fill the rôle both of scholar and man of science, and so the division of interests arose. The clergyman naturally confined himself to those studies which appeared to be immediately necessary to his calling, and, as the schools were mostly under his control, they naturally assumed, or rather retained, their purely literary character. For long this state of things has been regarded as unsatisfactory, and gradually some provision for the teaching of science has been introduced into nearly all our public and secondary schools. But it is only now and under the pressure of the great events which are causing us to probe into and search out the weak points in all our national institutions, that the public are beginning to recognise that it is necessary not only to provide opportunities for the study of science in our schools, but to insist that science shall form part of everyone's education. If I am right in my belief that the majority of moderate men consider that both the humanities and science should find a place in education, the only question really at issue is their relative importance and the amount of time which should be devoted to each.

In considering the place of science in secondary schools—for it is only of higher or secondary education I am speaking—

during the period within which, in my opinion, the education of all pupils should be the same, i.e., from thirteen to sixteen or thereabouts, we are at once confronted by three problems each presenting serious difficulties. How much time should be given to science? What science subjects should be taught? Who is to teach them? I propose to deal only with the second of these. We must assume that by a rearrangement of the time-table four or five hours a week at least will be set free for science. This rearrangement will almost necessarily involve a curtailment of the time at present given to Latin. The classical student, therefore, will probably enter the University less far advanced in his own special subjects than at present: but consider the advantage to the State if every pupil took with him from school some knowledge of scientific methods, scientific facts, and the laws which govern the material universe of which so many at present are profoundly ignorant.

What do we really mean when we speak of teaching science in schools? Is the object to imbue the pupil with the spirit and aims of scientific inquiry, while laying a solid foundation of fact and method for future specialisation, or is it merely to bring him acquainted with the achievements of science? The expression "generalised science" is much on the lips of speakers on educational reform at the present time, and I confess that it fills me with misgiving. I am not sure that I understand what it means, but if, as I suspect, it means and it is difficult to see what else it can mean a composite course including a little physics, a little chemistry, a little biology, and a little of everything else then I venture to predict that no matter how skilfully the portions are selected, no matter how carefully they are pieced together, such a course will not serve the first of the two objects I have indicated and will possess little, if any, real educational value. Imagine, too, the mental condition of a youth of sixteen or seventeen who, while following his other studies, has been struggling to master the elements of the whole range of sciences. The attempt to make the science curriculum a comprehensive

one, whether by teaching "generalised" science or the elements of the sciences individually, could only result in intellectual confusion and, at best, in the acquisition of a few disconnected facts and ideas, but no real knowledge. The one way to obtain really satisfactory results is to concentrate on a limited number of subjects, carefully selected with reference to the pupil's age and stage of mental development and to their suitability to serve as an introduction to further science studies. Matthew Arnold's injunction "Simplify" -applies here with special force. A little consideration will suffice to show that all sciences are not equally suitable for school education. This is obviously true of those which demand a previous knowledge of other sciences. The study of physiology, for example, cannot be taken up with advantage I am here speaking of scientific studies, not of the mere acquisition of useful knowledge regarding the functions of the body, which is quite a different matter—until after considerable progress has been made with chemistry and physics. And the same holds true of geology, which is really the application of all other sciences to the elucidation of the history of the earth. A knowledge on the one hand of the tacts and principles of biology and, on the other, of those of physics and chemistry lies at the root of all the other sciences. With the former I do not propose to deal. I will only say this, that in my opinion an acquaintance with its leading facts and principles should form part of the education of everyone. They are of vital importance because they are bound up with questions of hygiene and sociology which all should understand. Moreover, the training in observation which the study of plant and animal life affords cannot be supplied in any other way, because here we are dealing with structures which are related to one another in virtue of the organic laws of their development and functions. Turning to the experimental sciences—physics and chemistry—what is their relation to one another and what should be the order of their study? Every teacher of chemistry knows that little progress can be made unless his students have some

previous acquaintance with the rudiments of mechanics. At the very outset he is met with questions involving a knowledge of the properties of matter, and before he has gone far all real progress is barred unless he can assume a knowledge of the action and measurement of forces, and of the conditions of equilibrium, on the part of his students. And so it is with the study of heat, light, and electricity. Logically, therefore, the study of the properties of matter and of mechanics should precede the study of the special branches of physics and the study of chemistry. Should we not, then, assign to these subjects as lying at the root of all the experimental sciences the first place in the science curriculum of the schools? By doing so we should be following the order of their historical development, and experience teaches us that that is the order in which, as a rule, they can be studied to most advantage. Moreover, it is in connection with observations on properties of matter which are apparent without the aid of either physical or chemical experiment and on the action of bodies upon one another or on their movements in relation to one another that curiosity in natural phenomena is first aroused. Why do the posts of a railway fence flash past, while the cattle in the field appear to pass slowly and the houses on the hillside beyond to stand still? Why is one rail tilted above the other at a curve in the railway? Why do tall chimney stacks appear to lean over as seen from a railway carriage rounding a curve. Such are the questions with which one is assailed by an observant boy on a railway journey, and they are questions to which many of us. I fear, are accustomed to make evasive answers.

But is mechanics suitable as a school subject? Is it not usually found by the beginner to be one of the dreariest of the sciences? I hasten to explain that what I have in view is not mechanics taught as a branch of mathematics, but taught experimentally with no more arithmetic or mathematics than is absolutely necessary. The Master of Magdelene College, Cambridge, in a genial and most instructive address on education delivered recently before the Royal

Society of Arts, told the following anecdote of his Eton days:

"A teacher, lecturing on hydraulics, and treating the subject purely as an exercise in mathematics, drew on the board one day a hydrostatic press with an object in it of which he said: 'It might be a cheese; it might be a hat box.' A lively youth . . . said in a cheerful tone: 'But what is the use, sir, of all this?' To which the bewildered instructor, poising his chalk in his fingers, said: 'Use? Use? What's the use of you!'"

The boy in this case was not necessarily a precocious utilitarian. What he meant was that the experiment had no relation to anything within his experience. I suppose there were no pneumatic tyres in those days, but if the teacher had been able to reply, "to pump up the tyre of your bicycle" for the same principle is involved in that operation as in the working of the hydraulic press we should have missed a good story, but the boy's attitude towards the subject would probably have undergone a change. Having found a point of contact with the boy's own experience, the teacher might have based a whole course of experimental mechanics on the examination of the bicycle, its cranks, its gearings, its bearings, its springs, and that mystery of mysteries, to the uninitiated, the slender spokes of its wheels, which resist buckling under the weight of the heaviest rider. It is this want of touch with the realities of the pupil's life that makes so much teaching barren. What I have in mind is a course of instruction in which the examples would be drawn largely from the pupil's own experience, from the mechanism of motors and locomotives, from school games and from ordinary phenomena which are within everyone's observation, and which would be abundantly illustrated by means of simple models and apparatus.

For several years I was head of a great public museum which possessed an exceptionally fine collection of machinery and of models constructed to show how the most complex machines, no matter for what purpose intended, are

built up by the piecing together of a few simple machines and how these simple machines again are based on a few elementary mechanical principles. There was no more popular collection in the museum, and I used often to think, as I watched our young visitors' interest in these models, what an opportunity was lost in not turning this curiosity to good account. Mechanics taught even as I suggest might lack some of the attractions of a beginner's course of inorganic chemistry, but it is a mistake to suppose that the interest taken by young people in a scientific experiment can really be gauged by the gratification it affords to the eye or ear. A closely reasoned and lucid explanation, which answers the questions suggested to the mind of a pupil by an experiment, will hold his attention and afford him more real satisfaction than a display of the most brilliant phenomena.

I do not profess to think that the subject is an easy one, in the sense that it calls for no effort on the part of the pupil; a subject which does not demand such an effort is of no value educationally. But I believe it is well within the reach of the average pupil and it has these great merits as a school subject. Its problems are perfectly definite in character, they involve no training in abstract ideas, they can be studied without the use of a highly technical vocabulary, and are capable of being made intensely interesting if care be taken to adapt the illustrations to the age of the pupil and to the topics which may be assumed to be occupying his mind. Moreover, the experiments involved are usually of a simple character and seldom require the use of complicated apparatus

a great advantage for beginners, who frequently lose sight of the real point of an experiment in trying to master the intricacies of the appliances with which it is performed. Again, my old colleague, Professor Andrew Gray, of Glasgow, to whom I am indebted for many hints on this subject, has pointed out that the root ideas of velocity and acceleration are those of a rate of change of growth, of distance, or of speed. The fundamental notion of the Differential Calculus is that of the rate of change of an area, of a volume, and the like, so

that when the scholar has come to appreciate these elementary dynamical ideas he has unconsciously gone a long way towards laying the foundation of a knowledge of even advanced mathematics. Careful arrangement and gradation of the lessons would be necessary, and it would be essential to ascertain that the pupils had thoroughly mastered one stage before the next was entered on. The fact that the problems admit of endless variation affords the means of applying the necessary tests. The subject would also have to be carefully co-ordinated with the teaching of arithmetic and elementary mathematics, but in such a way that its experimental aspect was never lost sight of. It should be continued from term to term and from session to session through the three years over which I assume the non-specialised training would be spread, until the application of mechanical principles to the solution of simple problems ceased to present any difficulty.

Although we are a nation of engineers it is extraordinary how little trouble we take, unless we are professionally interested, to understand mechanism and the principles of mechanics. There is no subject in regard to which even scientific men, apart from the limited number who make physics their special study, feel less confidence in themselves, or in connection with which mistakes are of more frequent occurrence. Everyone will recall how a very distinguished man once explained that it is easier for a baker to carry his board on his head than in his hands, because on his head it is further removed from the centre of the earth and, therefore, acted upon to a less extent by the force of gravity. The cause of such difficulties and blunders is not, I believe, that the ideas are beyond the grasp of the ordinary person, but that they are treated too exclusively from the mathematical point of view without reference to actual practical problems, and that the time and attention devoted to their study are wholly insufficient to allow of a clear conception and a firm grip being obtained of them.

It is hardly necessary for me to enlarge before such an audience upon the importance of a thorough knowledge of

mechanics to the chemist. I may, however, point out that it is not only in the branch of chemistry which we designate "Physical Chemistry" that mechanical principles are involved, but in all the branches of the science, even in organic chemistry, where every day we are being brought into closer touch with questions of the stability or instability of groups of moving or rotating bodies. It may safely be affirmed that the wider diffusion of a thorough knowledge of mechanics would exercise a powerful influence on the progress of pure chemistry and in the development of all industries in which chemistry finds application. It is for this reason and in view of the developments to which I referred earlier in this address that I have considered it worth while to devote so much attention to the subject, at some risk, perhaps, of exposing myself to the taunt that in assigning a position of priority to another subject I am acting the part of Advocatus Diaboli in respect of our own science.

One great advantage of limiting the science subjects to be taught in schools would be the help such limitation would afford towards a solution of the difficulty of finding a supply of competent teachers. This difficulty, it seems to me, can never be properly met until we have a common policy as to the selection of subjects to be taught. So long as science may mean biology, or chemistry, or physiography, or applied mathematics, singly or in combination, the problem of securing really competent teachers is never likely to be satisfactorily solved. No ordinary man can possess more than a secondhand and superficial knowledge of a wide range of sciences to-day. But if we agreed that whatever else was taught in schools the elements of experimental mechanics should always be taught, a supply of teachers, at least thoroughly trained in this subject, would be forthcoming as surely as a supply of classical or mathematical teachers.

You will ask, do I suggest that science in schools should be limited on the experimental side to the study of the properties of matter and to mechanics and that there should, for example, be no place for chemistry? My answer is that it

would be impossible to accept any scheme as satisfactory which did not make some provision for chemistry. With the study of chemistry the pupil is brought into touch with an entirely new order of ideas and facts of such enormous importance from many points of view that some knowledge of them should form part of everyone's education. My argument is simply that mechanics in proper logical sequence comes first and should be taken up first in the order of studies, and that in view of its fundamental importance to the study of all other sciences it should occupy a correspondingly important position in the school curriculum. This need not, however, necessarily involve the exclusion of other subjects. For the reasons which I have just mentioned chemistry should, in my opinion, be taken up next, and the opportunity of studying it at school afforded to everyone, seeing that only a very limited number will ever have the opportunity of doing so subsequently. There should be no difficulty in finding a place for it when the general time-table has been rearranged and a reasonable amount of time has been allocated to science. But, I repeat, the number of distinct branches of science that can be introduced with advantage into the school curriculum must be limited - I mean sciences that are to be taught systematically as sciences—if any real progress is to be made.

It does not follow, however, that the pupil need leave school altogether ignorant of the leading facts and conclusions of other sciences. I am old-fashioned enough to believe that much valuable, interesting and stimulating instruction concerning all branches of science can be conveyed through the medium of carefully selected reading lessons, a medium of instruction far too much neglected in these days. This would not, of course, take the place of scientific education, but it would supplement it. It might be used to arouse interest in subjects which cannot be systematically studied in the ordinary school-course, and to convey information which would be valuable to everyone. I recall with something like affection—a feeling which one does not always cherish for old school books—certain "readers" which were popular half a century ago when

science in schools was almost unheard of. They contained accounts of the solar system, of volcanoes, of clouds, and such like subjects, mostly taken, I believe, from the writings of well-known authors who had cultivated the art of popularising such knowledge. In reading them we never supposed we were studying science, but an interest was awakened in subjects of which we should otherwise have remained entirely ignorant, and no doubt in many cases this interest afterwards bore fruit in genuine studies.

It is a mistake to disparage popular methods of bringing the truths of science within the reach of the unscientific. Every day the language in which our treatises are written becomes more technical and difficult, and the need is greater now than ever before for men capable of translating the results of scientific investigation and thought into language which everyone can understand. you who belong to my own generation, a lecture by Huxley, Tyndall, Dallinger, or Ball, may have been the starting-point of an interest in studies which formerly had appeared dry and forbidding. I recall a lecture by Huxley on the Ancestors of the Horse a subject far removed from my own work—during which he held a great assembly entranced, while in perfectly simple language, stripped of all technicalities, he traced the development of the horse through geological time. It was a triumph of clear and logical exposition and a supreme example of the possibilities of the popular lecture as a means of education. If we discourage all approach to science except by the orthodox avenues we exclude many from getting at least a glimpse into its wonderland and turn back many an inquirer who might become a worthy recruit to the ranks of scientific workers.

But while the reading lesson and the popular lecture are excellent means of arousing interest in science, something more is required if science is to play a part in education comparable with that played by the old humanistic subjects. There must be thorough study of fundamental facts and principles, as it is only when the foundation has been

firmly laid that a superstructure of solid knowledge can be reared upon it.

Before concluding I desire to express my personal thanks to the Hon. Treasurer, the Vice-Presidents and Members of Council for their services. Mr. Bevan and Lieut,-Col. Smithells, the Vice-Presidents, who retire to-day in accordance with our constitution, have always maintained a keen interest in the affairs of the Institute. Mr. Bevan has been throughout his term of office a valued Member of Council, and has been assiduous in his attendance at our meetings. For several years he has been the Chairman of the House Committee, and I can only express my regret that while he has occupied that position we have not been able to provide him with the means to complete the furnishing of our new premises. Besides Col. Smithells, two other Members of Council now retiring from office have been engaged in military duties -Major H. R. Le Sueur and Col. W. H. Willcox. I should like to take this opportunity of saying that our Members and Students serving with the colours have done much to foster the increasing esteem in which chemists are held in the services. When we consider the high rank to which many of them have attained and the distinctions they have won, we have every reason to be proud of the part they have taken in the great conflict.

Proceedings of the Council.

FEBRUARY-MARCH, 1917.

Appointment of Committees. -The Council elected on March 1st held their first meeting on March 9th and appointed the Standing and Special Committees with their respective Chairmen (pp. 4-6).

Appointment of Examiners. -The Council have reappointed the Board of Examiners for the year ending March 1st, 1918.

Glass Research. Since the publication of Proceedings, Part I., in February, Professor Jackson has reported the following additional formulas:—

XXX. (46).—Opal glass—alternative to No. II. (18). (Communi-

cated to Messrs. Molineaux, Webb & Co., Ltd.).
XXXI. (47).—Glass for highly resistant lamp chimneys—alternative to No. XXII. (38). (Communicated to Messrs. Molineaux, Webb & Co., Ltd.).

XXXII. (48).—Soft glass having good working properties in the flame -alternative to 3, 4, 6, 7, 8.

XXXIII. (49).—Dense barium crown glass required by the Ministry of

A collection of the formulas produced by the Glass Research Committee of the Institute has been communicated to the Glassware and Optical Munitions Department of the Ministry of Munitions.

Department of Scientific and Industrial Research. —The Civil Service Estimates include a sum of £1,038,050 for the Department of Scientific and Industrial Research.

The Standing Committee of the Department on Glass and Optical Instruments has appointed a number of sub-committees to which various subjects have been referred, such as: - raw materials for glass and glass-making; optical properties of a large range of glasses; general physical and chemical properties of glass and glassware for scientific and industrial purposes; testing and standardising glassware; workshop technique; X-ray glass apparatus; optical calculations and lens designing; optical instruments; and translation of foreign works on optics.

In February the Department appointed a Board for Fuel Research under the directorship of Sir George Beilby, with Professor W. A. Bone as consultant. The Board is to investigate the nature, preparation and utilisation of fuels of all

kinds.

Obituary.

JOHN COPE BUTTERFIELD died at Balham, on March 8th, 1917, aged sixty seven. He obtained his first instruction in science at the Leeds-Mechanics Institute and became pupil and later assistant in the laboratory of Mr. Edward Riley, with whom he stayed for six years, until 1871, when he entered on a course at the Royal School of Mines, and worked for a time in the private laboratory of Dr. Percy. From 1873 to 1891 he was Chemist to Sir George Elliott, Bart., M.P., colliery owner in South Wales. Subsequently he was chemist to the Miners' Safety Explosives Co., Ltd., and manager of the Complex Ore Co., Ltd., and finally for more than twenty years in London in private practice as a consultant, devoting his attention mainly to metallurgical matters. He was the author of "The Manufacturo of Explosives" (1901), patented several processes in connection with explosives and other technical subjects. He visited and reported on mining properties especially in connection with gold complex ores and with antimony, shale mining and distillation, and also investigated the economic working of peat and sewage problems in various parts of the world. He was elected a Fellow of the Institute in 1878.

JOHN KENT CROW died at Blackheath, on February 18th, in his sixty-first year. Educated at Chesterfield Grammar School and at Owens College, Manchester, he graduated as B.Sc. in 1874 and D.Sc. (Lond.) in 1875, proceeding to Würzburg for research work. After acting as private assistant to Sir Henry Roscoc, he became chemist to Messrs. Wilkinson, Heywood and Clark, Ltd., paint and varnish manufacturers, of London, Liverpool and Bristo, becoming general manager in 1898 and managing director in 1913, which position he resigned owing to ill-health in 1916. He was elected a Fellow of the Institute in 1887.

Henry Wilson Davis, an original Fellow of the Institute, was born at Lisburn. Ireland, on August 2nd, 1850, and died at Kingston-on-Thames, on November 23rd, 1916. He was educated at Westbury, in Wiltshire, and in 1872 gained an Inland Revenue Scholarship, thereby becoming a student at the Royal College of Chemistry, South Kensington, during 1872 3. He was then attached to the Inland Revenue Laboratory as a chemical assistant, and passed through its various grades until he ultimately became Deputy-Chief of the Government Laboratory, with which in course of time the Inland Revenue Laboratory had become incorporated. During the greater part of his time he was especially concerned with Revenue work, but he was also largely engaged in the examination of food and drugs and of samples referred to the Government Laboratory in cases of dispute under the Adulteration Acts. Portions of the work incorporated in Bell's Chemistry of Tobacco, and "The Analysis and Adulteration of Foods" and carried out by him. He retired in October, 1912, after forty years in the Government service.

ARTHUR GEOFFREY HAYDOCK, one of the earliest Associates of the Institute, died in 1916. He was assistant to Mr. Edward Davies, of Liverpool, from 1878 to 1886, and, after holding an appointment for a short time with the Runcorn Soap and Alkali Co., started a consulting practice in Manchester. Subsequently he held appointments with various chemical companies, and from 1901 to the time of his death was chemist to the Castner-Kellner Alkali Co., Ltd. He was elected a Fellow of the Institute in 1890.

LEONARD DE KONINGH died at Shepherd's Bush on December 1st, 1916, in his sixty-seventh year. He was a student in the laboratory of Professor Gunning, of Amsterdam, and afterwards chemist at the Amst rdam Candle and Stearine Works. In 1871 he came to Lindon and became chief chemist to the late Dr. John Muter, at Kennington, with whom he remained until 1898, when he started practice on his own account. He was an accomplished linguist and abstracted foreign papers for the Analyst and the Journal of the Chemical Society. He also translated articles for the Royal Academic of Science, Amsterdam, up to the time of his death. He was elected a Fellow of the Institute in 1887.

WILLIAM SCOTT TEBB died at Epsom, on March 3rd, in his fifty-sixth year. He graduated at Cambridge in Medicine and in the Natural Science-Tripos in 1882, proceeding subsequently to the degrees of M.D. and M.A. For several years he practised medicine at Bournemouth, specialising in diseases of the throat; but in 1899, he entered King's College, London, to prepare for the examinations of the Institute. He passed the Intermediate Examination in 1900 and, after working for a year with Colonel Cassal, Public Analyst for Kensington, the Final Examination for the Associateship in the chemistry of foods and drugs. He started in practice as an analytical and consulting chemist in London, and in 1902 he was appointed public analyst for the Metropolitan Borough of Southwark, which position he held for seven years, when he resumed private practice. He was elected a Fellow in 1904.

ARTHUR GUTHRIE TYE died of wounds on February 20th, 1917, in his twenty-second year. Educated at the Stationers' Company's School, he matriculated in June, 1911, and became registered as a Student of the Institute under Mr. W. C. Young. At the time of his death he was serving with the Honourable Artillery Company.

CHARLES HENRY Wood died on February 13th, 1917. He was for some time chemical adviser and quinologist to the Bengal Government and Professor of Chemistry at the Medical College, Calcutta. He was elected a Fellow of the Institute in 1878.

The Library.

Since the issue of the Proceedings for 1916, Part II., the Committee have had much pleasure in acknowledging the following gifts:—

ATACK, F. W., M.Sc., F.I.C.:

The Chemists' Year Book, 1917. (2 Vols.) F. W. Atack. Manchester, 1917.

The Proprietors of the Journal of Biological Chemistry (per H. D. Dakin, D.Sc., F.I.C., and A. N. Richards):

Journal of Biological Chemistry. Vols. XXV.—XXVIII. Phila-

delphia, 1916-17.

JOHNSTONE, SYDNEY J., B.Sc. :

The Rare Earth Industry. Sydney J. Johnstone, B.Sc. London, 1915.

KINCH, PROFESSOR E., F.I.C.:

Science Abstracts, Vols. I.—XVIII. London, 1898–1915.
Technical Methods of Chemical Analysis. Vols. I. and II. G. Lunge, and C. A. Keane. London, 1908 and 1911.

Inorganic Chemistry. W. A. Shenstone, F.R.S. London, 1900.

The Manufacture of Chemical Manures. J. Fritsch. Translated by D. Grant. London, 1911.

MORTON, MRS. P. F.:

Report of the British Association for the Advancement of Science, 1898-1915. London, 1899-1916.

Calcareous Cements, their Nature, Manufacture and Uses. G. R. Redgrave and Charles Spackman. London, 1905.

Radioactive Substances and their Radiations. E. Rutherford, LL.D., F.R.S. Cambridge, 1913.

MALLETT, F.R., F.I.C.

Rammelsberg's Mineralogie. Berlin, 1841.

Supplement to Rammelsberg's Mineralogie. Berlin, 1843. Supplement to Rammelsberg's Mineralogie. Berlin, 1853.

Bischof's Elements of Chemical and Physical Geology. London, 1854.
Determination of Organic Matter in Potable Water. J. W. Mallett.
Washington, 1883.

Norris, T. H., F.I.C.:

Report of the British Association for the Advancement of Science, 1868. London, 1869.

Principles of Chemistry. A. Naquet. Translated by W. Cortis. London, 1868.

Die Industrie der Steinkohlentheer—Destillation und Ammoniakwasser-Verarbeitung. Dr. Georg Lunge. Braunschweig, 1882. SANDERSON, JOHN, F.I.C.:

A Number of English and American Scientific Journals.

STATE BOARD OF HEALTH OF MASSACHUSETTS:

Forty-fifth and Forty-sixth Annual Reports. Boston, 1914 and 1915.

MESSRS. WILLIAMS AND NORGATE:

Raphael Meldola: Reminiscences of his Worth and Work by those who knew him, together with a chronological list of his publications, 1869—1915. Edited by James Marchant. Preface by the Right Hon. Lord Moulton, K.C.B., F.R.S. London, 1916.

Books Purchased.

Chemistry in the Service of Man. A. Findlay, M.A., D.Sc., F.I.C. London, 1916.

Practical Organic and Bio-Chemistry. R. H. A. Plimmer. London,

Chemical Discovery and Invention in the Twentieth Century. Sir William A. Tilden, D.Sc., LL.D., Sc.D., F.R.S. London, 1917.

Journals, etc., Wanted.

The Library Committee	will be greatly obliged by gifts of
any of the following, which	are needed to complete sets:—
Publication.	Wanted.
The Analyst	
The Chemical News	Vol. 28; many numbers of Vols. 29 and 30.
The Chemical Trade Journal	Vol. I.; many parts of Vols. 9—19; and No. 610.
Chemiker-Zeitung	Vols. 1—17, inclusive.
Chemisches Zentralblatt	The first four series, and Vols. 1 5
	inclusive, of the 5th series.
Comptes Rendus	From commencement to 1877 inclusive, and from 1894 onwards.
Journal of the Board of	
Agriculture	Part 2 of Vol. 2 to April, 1905, inclusive.
Journal of the Institute of	
Brewing	(Nos. for January and March); 1899 (Nos. for February and December).
Journal of the Royal Society	
of Arts	Many early volumes and parts before 1886.
Metallurgical and Chemical	
Engineering	Vols. 1—4 of The Metallographist, inclusive.
Nature	Vols. 35, 36, 44 and 62, inclusive.
Proceedings of the Royal	

Society Vols. 1—12 (1862), and Vol. 25 (1876) onwards. Zeitschrift angewandte Chemie From commencement to 1898; and 1901.

The Library Committee look to the Fellows and Associates for the continuance of their generous support.

FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERVING OR WHO HAVE SERVED WITH H.M. FORCES.

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

FELLOWS.

Agnew, J. W., 2nd Lieut., Highland Light Infantry (killed in action).

Akers, N. C., Sub-Lieut., R.N.V.R.

Alton, W. L. St. J., Sergeant, Honourable Artillery Company.

Archbutt, S. L., Corporal, County of London Regiment (Artists Rifles).

Atkins, W. R. G., Captain, R.F.C. (S.R.).

Auld, S. J. M., Captain, Chemical Adviser (Military Cross).

Bacon, G. N., 2nd Lieut., Royal Garrison Artillery.

Baker, M. S., 2nd Lieut. R.N.R.

Barke, H. F., Bombardier, Gloucester R.F.A.

Barrowcliff, M., Malay States Volunteer Rifles.

Bassett, F. L., Lieut., Royal West Kent Regiment.

Bean, C. E., Major, R.A.M.C.

Birch, W. Colet, Sapper, Motor Cyclist Section, R.E., British East Africa.

Blair, R. W., Lieut., R.E.

Bridge, S. W., Lieut., Divisional Gas Officer.

Brooke, J. R., Singapore Veterans' Corps.

Brown, B. M., 2nd Lieut., Wessex Brigade R.F.A.

Brown, J. A., Birmingham Battalion.

Browne, Frank, Hongkong Volunteer Reserve.

Bruce, Robert, Lieut., R.E.

Campbell, L. E., 2nd Lieut., Royal Highlanders.

Carruthers, G. M., Gordon Highlanders.

Carter, A. C., Lieut., The Welsh Regiment.

Caw, William, Corporal, R.E.

Charles, R. P., Lieut.-Colonel Commanding London Regiment.

Claremont, C. L. L., Captain, King's Royal Rifle Corps.

Clement, L., Corporal, R.E.

Collett, R. L., Lieut., Middlesex Regiment.

Cowap, J. C., Penang Volunteer Rifles.

Crossley, A. W., Lieut.-Colonel, Staff (mentioned for services).

Cunningham, A., Scottish Rifles.

Davidson, Alexander, 2nd Lieut., A.O.D.

Davidson, A. L., Gordon Highlanders.

Davis, O. C. M., Lieut., R.A.M.C.

Denney, E. J., Lieut., A.O.D.

Dunean, C. C., Captain, A.O.D.

Eastburn, G. J., 2nd Lieut., Motor Machine Guns.

Eaton, B. J., Sergeant, Malay States Volunteer Rifles.

Elliott, Stanley, Major, General Staff.

Evans, B. S., 2nd Lieut., The Queen's.

Evans, H. J., Lieut., R.F.A.

Eynon, Lewis, 2nd Lieut., R.E., seconded A.I.D.

Ferrey, C. E. C., Captain, R.A.M.C. (T.F.).

Finnemore, H., Staff Captain, Chemical Adviser, Northern Command.

Foster, J. A., Captain, East Yorkshire Regiment.

Franklin, A. C., Sergeant, Hongkong Volunteer Reserve.

Friend, J. Newton, Lieut., General Service.

Frye, C. C., Captain, R.A.M.C.

Gadd, W. L., Lieut, Colonel, Kent Royal Garrison Artillery (Service Corps).

Garle, J. L., Lieut., R.N.V.R.

Garrett-Smith, Noel, 2nd Lieut., Lancashire Fusiliers.

Gemmell, A., Captain Commandant, Command School of Gas Defence.

Gill, H. W., Horse Artillery (South African Mounted Rifles).

Gimingham, C. T., Lieut., General List.

Golding, J., Lieut., R.A.M.C. (T.F.).

Goldsbrough, H. A., Lieut., R.E.

Goodban, L., 2nd Lieut., Middlesex Regiment.

Goodwin, L. F., Major, Canadian Expeditionary Force.

Haddon, J. W., Singapore Volunteer Rifles.

Hampshire, C. H., Honourable Artillery Company. Harrington, A. G., Lieut., R.A.M.C. (T.F.).

Harrison, E. F., Lieut.-Colonel, R.A.M.C.

Hawley, Herbert, 2nd Lieut., A.O.D.

Hayward, Eric, Calcutta Light Horse.

Heap, Harri, Cadet, Manchester University O.T.C.

Heilbron, I. M., Major, A.S.C. (mentioned in despatches).

Henville, D., Lieut., Hants. Regiment.

Hill, J. R., 2nd Lieut., R.E.

Hills, J. S., Able-Bodied Seaman, R.N.V.R., Anti-Aircraft Corps.

Hinks, Edward, Lieut., A.O.D.

Hodgson, T. R., Captain, East Lanes, Divisional Transport and Supply Column, A.S.C. (T.F.).

Honneyman, William, Corporal, R.E.

Howard, B. F., Lieut., County of London Regiment (Artists Rifles).

Innes, A. G., Lieut., R.N.A.S.

Jones, G. C., Petty Officer, R.N.V.R.

Joy, A. S., Sergeant, R.E. (Ministry of Munitions).

Kent Jones, D. W., 2nd Lieut., R.E. (mentioned in despatches).

Kirkham, V. H., Captain, Unattached List, serving with the Forces in East Africa.

King, F. E., Lance-Corporal, East Surrey Regiment.

King, Herbert, 2nd Lieut., A.O.D.

Knight, L., Captain, R.F.A. (mentioned in despatches).

Krall, Hans, Trooper, United Provinces Horse (India).

Ladell, W. R. S., Captain, A.O.D.

Lang, W. R., Lieut.-Colonel, General Staff (Canada).

Law, D. J., Lieut., R.E.

Law, Robert, Lieut.-Colonel, Australian Engineers.

Leather, J. W., Major, Cheshire Regiment.

Le Sueur, H. R., Major, R.E.

Levy, L. A., Lieut., General Service.

Liversedge, S. G., Corporal, R.E.

Lucas, E. W., Chief Petty Officer, R.N.V.R., Anti-Aircraft Corps.

Luff, A. P., Major, R.A.M.C. (T.F.).

Makin, C. J. S., Lieut., General List.

Marriott, T. B., Lieut., R.E.

Matthews, C. P., 2nd Liout., East Surrey Regiment.

McCombie, H., Major, Chemical Adviser, 1st Army (mentioned in despatches).

McDonald, D., Lieut., Middlesex Regiment.

Mercer, Thomas, Lieut., Hants. Regiment.

Merrett, W. H., Major, R.E. (T.F.), London Electrical Engineers (Territorial Decoration).

Monier-Williams, G. W., Major, R.E. (Military Cross).

Moor, C. G., Captain, R.A.M.C.

Murphy, Paul, Captain, Commandant, Command Gas School.

Nash, L. M., Captain, Gloucestershire Regiment.

Neville, H. A. D., Captain, Essex (Fortress) R.E.

Norman, G. M., Corporal, R.E.

Norris, R. V., 2nd Lieut., Mahrattas.

Nuttall, W. H., 2nd Lieut., A.O.D.

Okell, F. L., Singapore Maxim Company.

Page, R. P., 2nd Lieut., Hants. Regiment (T.F.).

Pakes, W. C. C., Captain, South African Field Ambulance.

Paulley, W. M., Durham Light Infantry (T.F.).

Poole, E. S., Captain, A.O.D.

Potter, F. M., Corporal, County of London Regiment (London Scottlish).

Price, T. S., Lieut., R.N.V.R.

Priest, M., Captain, R.A.M.C.

Raer, Joseph, Captain, Canadian Army Hydrological Corps and Advisers on Sanitation. Read, W. J., Lieut., R.A.M.C.

Robison, R., Captain, R.A.M.C. (mentioned in despatches).

Ross, R. St. G., Major, East Lancashire Regiment.

Ryffel, J. H., Lieut., University of London O.T.C. (Medical Section).

Salter, C., Sergeant, Malay States Volunteer Rifles.

Saunders, W. G., Captain and Adjutant, King's Liverpool Regiment (killed in action).

Sawbridge, B. F., 2nd Lieut., City of London Regiment.

Shelton, J., Singapore Volunteer Rifles.

Shepherd, E. H., 2nd Lieut., R.E.

Simmons, T. A., Lieut., A.O.D.

Smith, A. R., 2nd Lieut., A.O.D.

Smith, E. W., R.A.M.C.

Smith, F., Major-General, C.B., C.M.G., Army Veterinary Service.

Smith, T. A., Lieut., Lincolnshire Regiment.

Smith, W. R., Colonel, R.A.M.C.

Smithells, Arthur, Lieut.-Colonel, General Staff.

Stanley, Harry, Lieut., Gloucestershire Regiment.

Stevens, M. W., Lieut., A.O.D.

Stone, O. J., 2nd Lieut., R.F.A. (died of wounds).

Stubbs, J. R., Lieut., A.O.D.

Summerson, S., Lieut., R.A.M.C. (T.F.).

Symons, W. H., Major, R.A.M.C. (T.F.).

Thompson, James, Lieut., General List.
Trotman, S. R., Captain, O.C. University College, Nottingham, O.T.C.

Wade, F., Sergeant, Hants Royal Engineers (Electric Light Companies).

Walker, F. G. C., Captain, R.E. (Military Cross).

Walpole, G. S., Captain, A.I.D.

Wheatley, Robert, Corporal, R.E.

Willcox, W. H., Colonel, C.M.G., R.A.M.C. (T.F.).

Wilson, E. J., R.A.M.C.

Wilson, F. J., Captain and Gas Officer to 15th Division.

ASSOCIATES.

Allan, J. L. S., Lieut., King's Own Scottish Borderers (killed in action).

Amoore, R. L., R.A.M.C. (T.F.).

Bainbridge, J. S., 2nd Lieut., Yorkshire Regiment.

Bate, S. C., St. Andrews University O.T.C.

Browning, R. G., 2nd Lieut., R.E.

Bunker, S. W., Captain, Royal Fusiliers (attached R.E.).

Campbell, N. P., Captain, Oxford and Bucks Light Infantry.

Cheke, T. W., Corporal, R.E.

Chown, C. R., Captain, R.F.A.

Christie, J. H., Corporal, R.E.

Clark, W. S., Corporal, R.E.

Clarke, A. L. R., Lieut., R.E.

Collins, C. G., Corporal, R.E.

Crawford, F. A. F., Captain, Royal Scots Fusiliers.

Crawford, J., Argyll and Sutherland Highlanders.

Dawson, D. S., Corporal, R.E.

Dingwall, A., 2nd Lieut., General List (attached R.E.).

Doidge, R. M., Acting Sergeant-Major, R.E.

Dunn, R. J., 2nd Lieut., Royal Warwickshire Regiment (reported missing).

Fielding, J. F. P., Squadron Sergeant-Major, County of London Yeomanry.

Frazer, D. R., 2nd Lieut., Worcestershire Regiment.

Georgi, C. D. V., Lieut., R.E. (mentioned in despatches).

Gilmour, H., 2nd Lieut., South Lancashire Regiment.

Harding, Gilbert, Corporal, R.E.

Harris, J. W., 2nd Lieut., 3rd Battalion Lincolnshire Regiment (died on active service).

Hay, J. G., Corporal, R.E.

Jones, E. O., Lieut., R.E.

Lambourne, H., 2nd Lieut., Sherwood Foresters.

Laughton, F. E., 2nd Lieut., Queen's Own Cameron Highlanders (Military Cross).

Martin, E. C., Essex Regiment.

Masters, E. A., Major, A.S.C.

Miller, J. B., Captain, City of Aberdeen Fortress Royal Engineers.

Norris, W. H. H., 2nd Lieut., R.E.

Norton, H. R., Corporal, R.E.

Pattison, J. W. H., Captain, Scottish Rifles (T.F.).

Phillips, H. A., Friends' Ambulance Unit (Red Cross).

Rayner, E. A., Corporal, R.E.

Rideal, E. K., Lieut., General List.

Robertson, Stewart, Royal Enniskilling Fusiliers.

Roos, C. B., Lieut., Gas Officer.

Smeaton, T. F., Lieut., R.E.

Solomon, J. B., Oxford and Bucks, Light Infantry, Staff-Captain Royal Flying Corps.

Thurston, F. S., Sergeant, Civil Service Rifles.

Vernon, Harold, Corporal, R.E. (killed in action).

Wheeler, E. G. G., University of London O.T.C.

White, F. D., Lieut., R.E.

White, J. C., Captain, Border Regiment (Military Cross).

Wilson, Arthur, 2nd Lieut., Leinster Regiment.

Wilson, Lothian, Major, O.C., Divisional Supply Column, A.S.C.

Wright, Thomas, 2nd Lieut., Royal Berkshire Regiment (killed in action).

STUDENTS.

Abelson, P., R.A.M.C.

Archibald, J. D., Lieut., Essex Regiment (died of wounds).

Bachrach, R., Lance-Corporal, London Electrical Engineers.

Bagshaw, W. N., 2nd Lieut., York and Lancaster Regiment.

Barclay, A., R.E.

Barry, W. R., Lieut., Royal Naval Division.

Beck, C. W., A.S.C.

Beecroft, S. B., Royal Naval Division.

Beesley, R. M., Artists Rifles.

Berridge, J. D., 2nd Lieut., South Lancashire Regiment.

Bishop, J. E., Captain, East Lancashire Regiment (killed in action,

Bishop, R. O., 2nd Lieut. (Ministry of Munitions).

Bowyer, E. G., 2nd Lieut., Cambridgeshire Regiment.

Boyd, G., 2nd Lieut., Argyll and Sutherland Highlanders (killed in action).

Bramer, J. D. S., Captain, Royal Warwickshire Regiment.

Brisley, C. W., 2nd Lieut., Irish Guards.

Brooke, H. W., Captain, East Yorkshire Regiment.

Bruckman, R. T., Lieut., Border Regiment.

Bull, P. C., Major, Suffolk Regiment (D.S.O.).

Bunbury, H. M., Bristol University O.T.C.

Butler, F. H. C., Lieut., Hampshire Regiment, Assistant Provost Marshal, 3rd Division, Mesopotamian E.F.

Buttrick, H. P., 2nd Lieut,. R.E.

Carlisle, W. F., Corporal, R.E.

Carson, S. D., 2nd Lieut., Royal Scots Fusiliers.

Chalmers, F. G. D., Corporal, R.E.

Chitty, E.C., 2nd Lieut., R.E.

Clark, L. M., County of London Regiment (London Scottish).

Clark, Robert, Lothian and Border Horse.

Clarke, F. G., Corporal, R.A.M.C.

Clarke, L. H., Corporal, R.E.

Clement, J., Captain, Hampshire Regiment.

Cohen, E. H., R.N.A.S.

Collen, F. D., Captain, Notts. and Derby Regiment.

Cooper, H. E., Lieut., R.E.

Cooper, William, 2nd Lieut., R.E. (Military Cross).

Cottrall, L.G., Corporal, R.E.

Cousins, F.G., Corporal, R.E. (D.C.M.).

Cowlishaw, G. D., Corporal, York and Lancaster Regiment.

Dalton, John, County of London Regiment (Artists Rifles).

Day, F., Lance-Corporal, R.G.A.

Dennett, S. H., Birmingham Battalion.

Doidge, E. F., Captain, A.S.C. (Analytical Chemist).

Dovey, E. R., Hongkong Volunteers.

Dunsmore, Adam, Corporal, R.E.

Eastman, W. V., No. 6 Officers Cadet Battalion.

Figg, E. F., Sergeant, R.E.

Follows, G. S., 2nd Lieut., King's Liverpool Regiment.

Forrester, C., Royal Flying Corps.

Fraser, F. J., Liverpool Scottish.

Frith, J. S., Captain, South Lancashire Regiment (mentioned in despatches).

Gale, R. C., 2nd Lieut., Royal Garrison Artillery.

Galletley, C. H., Corporal, R.E.

Garland, T., Corporal, R.E.

Garnett, K. G., A.B. Seaman, H.M.S. Sagitta.

Geake, Arthur, Corporal, R.E.

Gibbs, G. Harcourt, 2nd Lieut., R.G.A.

Gibson, J., Corporal, R.E.

Gibson, S., 2nd Lieut., A.C.C.

Goodwin, S. W., Sergeant, University of London O.T.C.

Gosney, H. W., 2nd Liout., 7th Rifle Brigade.

Greaves, Reginald, Corporal, R.E.

Griffiths, J. A., R.N.A.S.

Hand. P. G. T., Corporal, R.E.

Haselhurst, H. W., Major, Northumberland Fusiliers.

Hatfield, C. G. M., Captain, Middlesex Regiment.

Haythornthwaite, A., 2nd Lieut., R.F.A.

Hayward, C. O., 2nd Lieut., Lincolnshire Regiment.

Henry, John, Captain, Royal Scots Fusiliers.

Himus, G. W., Corporal, R.E.

Hislop, S. L., Corporal, R.E.

Hodgkin, A. E., Captain, Cheshire Regiment.

Hoff, R. W., Herefordshire Regiment.

Hofmeyr, R., 2nd Lieut., King's Own Yorkshire Light Infantry, attached R.F.C.

Holt, H. D. G., 2nd Lieut., Royal Fusiliers.

Hornby, A. J. W., 2nd Lieut., R.F.A.

Hunwicke, R. F., Chief Petty Officer, R.N.A.S.

Islip, H. T., Corporal, R.E.

Johnson, J. C., Lieut., A.O.D.

Jones, G. J., 2nd Lieut., South Wales Borderers.

Joynson, George, Lancashire Fusiliers

Kind, R. G., Corporal, R.A.M.C.

King, F. J., R.N.A.S.

Knaggs, John, 2nd Lieut., R.E.

Lea, H. T., Lieut., Divisional Gas Officer.

Le Brocq, L. F., Lance-Corporal, London Regiment.

Lever, D., Corporal, R.E.

Levingston, H. G., 2nd Lieut., A.S.C.

Linzell, L., Staff Sergeant, A.V.C.

Loaring, W. C., Lieut., R.E.

Lynch, G. Roche, Temp. Surgeon, Royal Naval Hospital.

MacCulloch, A. F., Lieut., R.F.A.

Mackay, R. L., 2nd Lieut., Argyll and Sutherland Highlanders.

Mackenzie, P., 2nd Lieut., Argyll and Sutherland Highlanders.

Maclean, A., R.E.

McDougall, D., Corporal, R.E.

McLachlan, T., Corporal, R.E. (D.C.M.).

Mendoza, E., Essex Regiment (attached Royal Aircraft Factory).

Merheim, G., Quartermaster-Sergeant, R.E.

Miller, C. J., Sussex Regiment.

Mitchell, C. A. D., Lieut., Devon Regiment.

Moore, G. W., Corporal, R.E.

Morrison, Norman, Lieut., King's Liverpool Regiment.

Muggeridge, H. D., 2nd Lieut., Royal Sussex Regiment.

Mumford, E. M., Captain, Lancashire Fusiliers.

Murray, K. F. M., Lieut., London Regiment.

Needs, F. E., Corporal, R.E.

Nelson, W. R. F., University of London O.T.C.

Newitt, L. D., Lieut., Royal Artillery.

Nixon, C. J., 2nd Lieut., Bedfordshire Regiment.

Norman, D. J., Corporal, R.E.

Northover, R., Lieut., Lancashire Fusiliers.

Oates, F., Sergeant, R.E.

Parker, H. V., 2nd Lieut., R.F.A.

Paterson, T., McI., Corporal, R.E. (died of wounds).

Patterson, A. A., 2nd Lieut., Border Regiment.

Phillips, R. J., R.N.A.S.

Phillips, S. B., R.N.A.S.

Pickard, C. E., 2nd Lieut., North Staffordshire Regiment.

Pollard, H. E., Friends' Ambulance Unit.

Potter, J. H., Corporal, R.E.

Prince, J. S., Lieut., London Regiment (killed in action).

Pullman, A. D. R., Devon Cyclists.

Richards, E. M., Corporal, R.E.

Roberts, E. J., Cadet, University of Wales O.T.C.

Robertson, J. A., Highland Light Infantry.

Robinson, A. A., Lieut., R.G.A. (killed in action).

Robson, J. C., R.E.

Rogers, E. W., Lieut., West Riding Regiment.

Ross, Kenneth, 2nd Lieut., Royal Irish Rifles (killed in action).

Ruddock, F. A., York and Lancaster Regiment.

Rudolf, M. E. S., Corporal, R.E.

Sadler, F., Durham Light Infantry.

Sanderson, F. W., Lieut., R.E. (killed in action).

Senior, Alan, Lieut., R.F.A.

Shipston, G. T., Lieut., Leicestershire Regiment.

Silvester, W. A., Cadet, Sheffield University O.T.C.

Smith, F. W. H., R.N.A.S.

Smith, G. E., 2nd Lieut., Argyll and Sutherland Highlanders (killed in action).

Smith, L. P., 2nd Lieut., R.G.A. (deceased).

Snow, W. A., Corporal, R.E.

Somer, A. J., R.A.M.C.

Spicer, J. I., Lieut., East Lancashire Regiment.

Spiers, C. W., Corporal, R.E.

Stearn, J. H., 2nd Lieut., Durham Light Infantry.

Steele, A. R., 2nd Lieut., Scottish Rifles.

Stephens, H. C., Lieut., R.F.C.

Stewart, R. F., R.E.

Stockdale, E. L. J., Lieut., Lancashire Fusiliers (killed in action).

Suckling, E. V., Sergeant, Mobile Analytical Laboratory, R.A.M.C.

Sugden, J. N., Lieut., General List.

Taylor, A. J., Overseas Contingent.

Taylor, C. B., R.E.

Taylor, H. A., Hongkong Volunteers.

Thompson, S. G., West Kent Yeomanry.

Thomson, M. C., Cambridge University O.T.C.

Tye, A. G., H.A.C. (died of wounds).

Ward, E. C., Lieut., A.S.C.

Waters, P. W., 2nd Lieut., R.E.

Watt, J. J., County of London Regiment (Artists Rifles).

Webb, H. M., Lieut., General Service List.

Webster, H. G., Sergeant, R.E.

Whitham, R. P. M., 2nd Lieut., Northumberland Fusiliers.

Whitworth, A. B., Corporal, R.E.

Whitworth, C. W., R.N.A.S.

Williamson, C. G., 2nd Lieut., Royal Warwickshire Regiment (killed in action).

Wilson, D. M., Captain, R.E. (Military Cross).

Wynn, W. O. R., Sergeant, R.E.

CANDIDATES FOR EXAMINATION.

Brekke, L. O., 2nd Lieut., East Yorkshire Regiment.

Child, A. J., 2nd Lieut., County of London Regiment (Artists Rifles).

Childs, Hugh, Lieut., General List.

Cunnew, G. A., 2nd Lieut., Royal Berkshire Regiment.

Cunnington, F. W. B., 2nd Lieut., A.S.C.

Janson, J. T., 2nd Lieut., King's Own Yorkshire Light Infantry.

Leitch, Eoin, Lieut., Argyll and Sutherland Highlanders.

McConnan, James, Temporary Captain, Manchester Regiment (killed in action).

Meads, J. A., Sherwood Foresters.

Quibell, A. H., Captain, Sherwood Foresters (mentioned for distinguished service).

Rait, P. W., Corporal, R.E.

Reynard, H. C., 2nd Lieut., East Surrey Regiment.

Sewill, J. W., Lieut., Reserve of Officers, Army Cyclist Corps.

Snell, F. S., 2nd Lieut., Royal Berkshire Regiment.

Stigand, I. A., Royal West Kent Regiment.

Taylor, H. F., 2nd Lieut., R.G.A.

Thin, R. G., 2nd Lieut., King's Own Scottish Borderers.

Vinicombe, L. F., 2nd Lieut., Devon Regiment (killed in action).

Vulliamy, B. L., Royal Fusiliers.

Watson, J., Staff-Sergeant, R.A.M.C.

Webb, H. W., Royal Warwickshire Regiment.

The Register.

Since the publication of Proceedings, Part I., 1917, the Council have elected 4 new Fellows, have elected 4 Associates to the Fellowship, and admitted 10 Students. I Fellow has been re-elected. 4 Fellows and I Student have died.

New Fellows.

Bedford, Sir Charles Henry, D.Sc., M.D. (Edin.), LL.D. (St. Andrews), Association of British Chemical Manufacturers, 166, Piccadilly, London, W.

Bowles, Thomas Henry, 43, Albion Road, Westcliff-on-Sea, Essex.

Revis, Cecil, A.C.G.I., 5, Carlton Villas, Station Road, Barnes, London, S.W.

Smith, Ernest Woodhouse, M.Sc. (Vict.), 38, Malvern Road, Acocks Green; and Gas Department, Birmingham.

Associates Elected to the Fellowship.

Heaven, George Samuel, B.Sc. (Lond.), "Templemead," Albany Road, Coventry.

Kent-Jones, 2nd Lieut. Douglas William, B.Sc. (Lond.), "Strathmore," Orlands Road, Clapham, London, S.W.

Spencer, Edmondson, A.R.S.M., 31, Ivydale Road, Nunhead, London, S.E. Storey, William Armstrong, B.Sc. (Lond.), Home Cottage, Wick, Near Bristol.

Fellow Re-elected.

Glendinning, Tom Aldrich, Technical College, Wellington, New Zealand.

New Students.

Clark, Francis William, 35, Wilmington Square, London, W.C. Cohen, Abraham, 296, Old Ford Road, Victoria Park, London, N.E. Greenstreet, Victor Robert, 56, Clifton Road, Church End, Finchle

Greenstreet, Victor Robert, 56, Clifton Road, Church End, Finchley London, N.

Griffiths, Jenkyn Arthur, 93, Cilfynydd Road, Pontypridd, Glam.

Moscow, Joseph, 14, Abinger Road, Bedford Park, London, W. Pennington, Hannah Smith de, 39, Dukes Brow, Blackburn.

Print, Harold Celestine, 69, Selsey Road, Edgbaston, Birmingham.

Rogers, Sidney John, 137, Clements Road, East Ham, London, E.

Thomson, Robert William Murray, 1, Hyndford Terrace, Dundee.

Turner, William Oliver, 78, Richmond Road, Leytonstone, London, N.E.

DEATHS.

Fellows.

Butterfield, John Cope.
Crow, John Kent, D.Sc. (Lond.).
Tebb, William Scott, M.A., M.D. (Cantab), M.R.C.S. (Eng.),
L.R.C.P. (Lond.), D.P.H. (Cantab), L.S.A.
Wood, Charles Henry.

Student.

Tye, Arthur Guthrie (died of wounds).

ERRATUM.

The name of Harold Thomas Islip (reported in error as having been killed in action) has been restored to the Register of Students of the Institute.

General Notices.

Intermediate and Final Examinations: July, 1917. —Candidates desirous of presenting themselves for examination in July next are requested to communicate with the Registrar.

Examination in Biological Chemistry.—An Examination in Biological Chemistry, Bacteriology, Fermentation and Enzyme Action will be held in October, 1917.

Notice to Associates.— Associates elected prior to April, 1914, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, may obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in making known suitable appointments for professional chemists.

Examinations in Chemical Technology, October, 1917.—The Chemical Technology Examinations Board will be prepared to hold an examination in October next. The exact date will be announced later.

The examination will be open only to Fellows and Associates (who have been registered as such for at least one year) who produce satisfactory evidence of technological training and experience.

Candidates who desire to present themselves are required to forward their applications and fees not later than Tuesday, September 11th, and to mention one important branch of industry, in connection with which their knowledge of the subjects of the examination may be tested.

For further particulars, application should be made to the Registrar.

Government Service.—Chemists who wish to apply for commissions with the forces, or to obtain appointments in connection with Government industrial work, are advised to communicate with the Registrar.

History of the Institute: 1877—1914.—A number of copies of the Special Edition of the History of the Institute, printed on hand-made paper and bound in cloth, are yet obtainable at 15s. each net.



BUILDING FUND.

The sum now considered necessary to complete the scheme of equipment and furnishing of the building of the Institute, is estimated at about £2,250.

THE

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

PROCEEDINGS.

1917.

PART III.

PROCEEDINGS OF THE COUNCIL (MARCH—JULY, 1917). OBITUARY. EXAMINATIONS. MEMBERS AND STUDENTS WITH THE FORCES. CHANGES IN THE REGISTER. NOTICES.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary.

30, Russell Square, London, W.C. 1.

August, 1917.

Proceedings Committee, 1917-18.

HORATIO BALLANTYNE (Chairman),
SIR JAMES J. DOBBIE (President),
CECIL H. CRIBB,
M. O. FORSTER,
ERNEST M. HAWKINS,
ALEXANDER LAUDER,
D. NORTHALL-LAURIE,
P. A. ELLIS RICHARDS,
W. H. ROBERTS,
W. LINCOLNE SUTTON,
THOMAS TICKLE.

Proceedings of the Council.

MARCH-JULY, 1917.

Regulations.—The Council have had under consideration the revision of the regulations for the admission of Students, Associates and Fellows of the Institute, having regard to the views expressed by the Members on the scheme contained in the circular issued with the Proceedings in November, 1916. Broadly, the replies received could be divided into (i.) those from Members opposed to any change in the regulations already in force; (ii.) those indicating a desire for strengthening the Institute by the general admission of chemists who had obtained degrees with honours or other recognised diplomas, and who had proved by subsequent experience their competence to practise, and particularly such as had been prevented from taking the examinations for the Associateship by service connected with the war; and (iii.) those from Members who advocated the postponement of the consideration of the whole matter until the restoration of peace.

In view of the importance of being ready with a definite scheme at the end of the war, the Council felt it expedient to proceed with the matter without delay.

In the new Regulations which have now been adopted and which are being issued with this Part of the Proceedings, the Council have provided that every candidate for the Associateship shall have had at least *four* (instead of three) years' systematic training, or the equivalent, in chemistry, physics and allied subjects; they have reduced the number of examina-

tions by the elimination of the Intermediate, while providing means for safeguarding the possession of a satisfactory knowledge of general theoretical chemistry; and they have allowed for the admission of candidates of good education and experience whose circumstances have not allowed of their following strictly the normal curriculum. It will be noticed also that, to encourage chemists engaged in industry to proceed to the Associateship, the examination in chemical technology has been included as one of the branches of the examination for the Associateship. Further, as a temporary measure and in view of the fact that the war has prevented many candidates from presenting themselves for examination, they have made special provision (as set out in a circular issued separately), for considering in such cases the election of Associates without examination by the Institute. They have also introduced conditions for the election of Associates to the Fellowship which should enhance the value of the higher qualification.

The Council believe that the new Regulations will tend to strengthen the position of the Institute as a representative professional body, and they look for the co-operation and assistance of the Fellows and Associates in bringing them to the notice of eligible candidates.

The new Regulations will not in any way affect the powers of the Council to elect Fellows in exceptional cases under the provisions of clause 5 of the Royal Charter, or the interests of Students previously registered, who will have the option of proceeding to the Associateship and Fellowship by either the present or the new method, or the interests of existing Associates, who will be entitled to apply for admission to the Fellowship under the Regulations in force at the time of their election to the Associateship.

Glass Research.—The Minister of Munitions (Dr. Addison), speaking in the House of Commons on June 28th, 1917, and referring to the work of the Optical Munitions and Glass-

ware Supply Department under the direction of Mr. Esslemont, said that gun sights and apparatus for aeroplane photography, for telegraphic work, and for a host of other purposes, were supplied by that branch. Its triumphs had been due to the enthusiastic co-operation of scientific men, manufacturers, workers, and the training schools. Before the war we could rely on British sources for only about 10 per cent. of the optical glass this country required; most of the rest came from Germany or Austria. Difficult formulas had to be worked out, especially for manufacturing purposes, and mainly owing to Prof. Jackson and his colleagues we now had adequate supplies of the higher types of optical glasses for ourselves, and also were able to provide substantial assistance to our Allies. A whole group of new industries connected with the glass trade had been placed on a secure commercial foundation.

Hitherto this country had been entirely dependent on Germany for its supplies of potash. Thanks to the ingenuity of Mr. Kenneth Chance and other gentlemen working with him, a process had been discovered whereby great quantities of potash might be obtained, and the development of the scheme was in operation with the assistance of the Ministry. We should be able to provide every ounce of potash that the glass trade required, as well as very largely to meet the needs of agriculture.

Dr. Addison also remarked that the production of sulphuric acid had necessarily undergone great development, not only in private works, but in the factories of the Ministry. The quantity of the fuming acid produced was more than fifteen times as great as before the war, and the cost was much less. Whatever arrangements were made for the future, it was essential that sulphuric acid should be made available to bonâ fide users at fair rates, and, if this were done, it should lead to the establishment of an important group of new industries.

The Glass Research Committee have received reports from

firms working to formulas supplied by the Institute, indicating that, almost without exception, they have been able to produce satisfactorily the glass for which the formulas were designed. The reports cover nearly all the formulas issued, and show that the manufacturers appreciate the work done and the assistance given them from time to time by Prof. Jackson in that connection.

The researches have been continued and the following formulas have been received since the publication of Proceedings, Part II.:—

- XXXIV. (50).—Resistant glass based on No. 3, but of higher resistance to the chemical action of acids and alkalies.
 - XXXV. (51).—Optical glass (light flint) made at the request of the Ministry of Munitions, described as "A. Lens II."
- XXXVI. (52).—Optical glass made at the request of the Ministry of Munitions, described as "A. Lens IV."
- XXXVII. (53).—Glass intermediate between soft soda glass and the glass for holding tungsten wires. See XXXVIII. (54).
- XXXVIII. (54).—Glass designed to hold tungsten wire sealed into it, required for the manufacture of certain electric lamps.
 - XXXIX. (55),—Glass suitable for the manufacture of vessels used in preserving meat, etc.

The Glass Research Committee have considered an invitation from the Department of Scientific and Industrial Research to undertake (i.) the preparation of a reference list of vitreous compounds, their compositions, densities, refractive indices and dispersive powers; (ii.) an investigation of cements for prisms and lenses. The Department has intimated that suitable grants would be placed at the disposal of the Committee for these investigations and that the conditions attached to the grants would be communicated in due course.

With reference to the first inquiry, Prof. Jackson has been empowered to make all necessary arrangements for proceeding with the work, and with regard to the second; an arrangement has been made under which, with the concurrence of the Council of the Pharmaceutical Society, Prof.

H. L. Smith is now conducting, in the laboratories of the Society, a research on Canada balsam and other substances used in the cementing of lenses and prisms. Prof. Smith has recently presented a report on preliminary experiments which have already produced results of interest and importance, and has indicated the lines on which the investigation will be continued. The preliminary report has been forwarded to the Research Department. The thanks of the Committee have been accorded to Sir David Prain, Director of the Royal Botanic Gardens, Kew, to Dr. Frank T. Shutt, Honorary Corresponding Secretary of the Institute at Ottawa, and to Messrs. Watson for presenting the Committee with samples of Canada balsam for use in the investigation.

The Committee have also received a report prepared by a Sub-Committee, consisting of Prof. Jackson, Vice-Chairman, Dr. J. J. Fox and Dr. C. K. Tinkler, on the testing of laboratory ware. After careful discussion by the Committee, the report was submitted to the Council and transmitted to the Research Department, for the information of the Standing Committee of the Department on Glassware and Optical Instruments, and copies were also forwarded to the Director of the Optical Munitions and Glassware Supply Department of the Ministry of Munitions, and to the Director of the National Physical Laboratory.

The Institution of Electrical Engineers has been in communication with the Institute with regard to acid tests applied to porcelain, and the views of Members of the Glass Research Committee interested in the matter have been communicated to a representative of the Porcelain Panel of the Research Committee of the Institution.

The question of the supply of hard-enamel chemical plant has also been considered, and information collected on the subject has been communicated to the Research Department and to the Society of Chemical Industry. The premises of the Institute were placed at the disposal of the Society of Glass Technology on Wednesday, May 16th, when Mr. A. S. Esslemont, Director of the Optical Munitions and Glassware Supply Department, presided, and Prof. Jackson gave an address on "Some General Observations on Glass" before a large gathering of representative manufacturers and others interested in the subject.

Public Appointments.—At the meeting of the Council held on June 1st, attention was directed to the fact that a Joint Committee of the Council and Senate of the University College of North Wales and members of the medical profession interested had made a proposal to the Denbighshire County Council, having in view the establishment, in connection with the College, of a "Public Health Laboratory," including a "Chemical Section," wherein should be undertaken analyses under the Sale of Food and Drugs and the Fertilisers and Feeding Stuffs Acts, and miscellaneous analyses.

It was suggested that a project of this nature would receive the active support of five counties in North Wales. The draft scheme stated that a large number of analyses were made for the County Councils under the Acts referred to, that there was every reason to expect that, with better organisation and a laboratory within reach, the amount of work would greatly increase. It was concluded, therefore, that a satisfactory revenue would be assured in time either from fees or from their equivalent grants for free work. It was proposed that the officer in charge of the Chemical Section should be an Associate or Fellow of the Institute, and it was anticipated that there would be no difficulty in obtaining the necessary assistance from students of chemistry who had just graduated.

The Council of the Institute also learned that the Denbighshire County Council had referred the matter to the Public Health, etc., Committee for consideration and report, and had decided that the Committee at their next meeting should receive a deputation on the subject from the Joint Committee.

On the general principle involved, the Council and Public Appointments Committee of the Institute felt that the establishment of laboratories of the character suggested should not be discouraged, being in the interests of the public health, tending to foster a wider appreciation of the value of chemical science in matters affecting the welfare of the community and affording increased opportunities for qualified chemists wishing to practise in this branch of the profession. They would deprecate any scheme which interfered with the proper functions of educational institutions, but no such objection could be raised in this case as it was stipulated that the proposed laboratory should be independent of the teaching staff of the College. They realised also that the various authorities concerned in the proposal were desirous of founding the laboratory within their own district and, having already determined to extend considerably the science buildings of the College, decided that it would be advantageous to include the laboratory in the larger scheme. On the other hand, the Council and Committee of the Institute were anxious that no hardship should be inflicted on those who held appointments likely to be affected by the proposal.

A letter was, therefore, addressed to the Principal of the College to the effect that, while the Council of the Institute recognised that the trend of the present time was towards a closer association of public institutions with the administration of statutes relating to such matters as public health, and appreciated the advantages to be derived from the system, the proposal was one which concerned the interests of the profession of analytical and consulting chemistry and in view of the fact that the Institute, under the provisions of its Royal Charter, was charged with the promotion and maintenance of the efficiency of that profession, the Council desired to bring the following points under the notice of the authorities of the College.

(i.) The Denbighshire County Council already possessed a duly appointed and properly qualified Public Analyst,

Additional Public Analyst, and Official Agricultural Analyst, who would be deprived of part of their practice if the scheme proposed were adopted. The Council of the Institute suggested, therefore, that the necessity for adequately protecting the interests of the Analysts concerned should be fully recognised, in the event of the scheme being adopted.

(ii.) The Council of the Institute learned with satisfaction that the staff of the section would be entirely distinct from the teaching staff of the University College, and they were further gratified to know that it was proposed to employ in the Chemical Section of the new laboratory thoroughly educated professional chemists, a provision which was very necessary in view of the grave responsibility frequently attaching to official chemical appointments under the Acts referred to, especially

in cases of a quasi-criminal character.

(iii.) The Council of the Institute, however, regarded with serious apprehension the proposal that the Chemical Section should undertake "miscellaneous analyses," as they felt that it should not be the intention to encroach on the general work of private practitioners in chemistry. Under such a scheme cases might occasionally occur in which it would be difficult to discriminate between official and commercial work. Where this occurred the fees should be adjusted to those commonly charged in the profession; that would only be equitable inasmuch as the proposed section would in part, at all events, be supported out of public funds, whereas the private practitioner had to meet all his expenses out of the fees he received for his work. The Council felt, moreover, that at a time when the Government and the country generally were roused to the necessity for the development of scientific education and for the fullest utilisation of the trained ability of men of science, individual effort should be encouraged by all possible means and that the greatest freedom of enterprise should be allowed to those who devoted their lives to scientific professions. They expressed the hope, therefore, that nothing in the proposed scheme would tend to discourage such initiative, and asked that their views might receive the careful consideration of the Council and Senate of University College in dealing with the matter.

Copies of the letter were also sent to the Denbighshire County Council, the Local Government Board and the Board of Education for their information.

Board of Education.—The Council have been in correspondence with the Board of Education with reference to a scheme under which the Board will undertake the functions and responsibilities of a co-ordinating authority for secondary school examinations, with the assistance of a body to be known as the Secondary School Examinations Council. This Council will consist of representatives of University examining bodies, Local Education Authorities, the Teachers' Registration Council and one representative of a Standing Committee of professional bodies. While approving in general principle of the objects sought, the Council of the Institute are of opinion that the constitution of the Secondary School Examinations Council should include a larger representation of the professional bodies.

Professional Chemists and the War.—The Institute has continued to afford assistance to the Admiralty, War Office, Ministry of Munitions and other Government Departments and Controlled Establishments requiring the services of chemists for various purposes connected with the war. The register maintained for this purpose is available to any British chemist.

Honours.—The Council are pleased to record that Sir Robert Abbott Hadfield has received the honour of Baronetcy; that Col. William Henry Willcox, C.M.G., has received the Companionship of the Most Distinguished Order of the Bath; and Lt.-Col. Arthur William Crossley and Lt.-Col. Edward Frank Harrison have received the Companionship of the Most Distinguished Order of St. Michael and St. George.

The following have received military decorations:—

Fellows.

Auld, Captain S. J. M... .. Military Cross.

Bunker, Major S. W. Cavalier of the Order of St.

Maurice and St. Lazarus.

Evans, Lieut. B. S. Military Cross. Monier-Williams, Major G. W. . . Military Cross.

Students.

McLachlan, Corporal Thomas. . . D.C.M.
Whitham, Lieut. R. P. M. . . . Military Cross.

Prisoners of War.—At the invitation of the Board of Education, the Council of the Institute nominated a representative to attend a conference for the purpose of considering a proposal that examining bodies in this country should accept the records of study of British prisoners of war in enemy or neutral countries as part of a course of the prescribed study for the professional examinations. Dr. Arthur Harden, F.R.S., Vice-President, was nominated and duly attended the conference. The Council were subsequently informed that a message was being sent to prisoners of war to the effect that certain professional institutions, including the Institute, were prepared to recognise in a liberal spirit any work done or examinations passed by prisoners while in captivity, and that any prisoner who wished to take advantage of the facilities which were being made to enable him to work for the examinations was advised to communicate through the Board of Education with the professional and other examining bodies concerned.

Examinations.—The Council have received the Report of the Board of Examiners on an examination held at Johannesburg in May, and on the July Examinations, to which reference is made on pp. 18—26 of this Part of the Proceedings.

The thanks of the Council have been accorded to the Department of Agriculture and Technical Instruction for Ireland, for the use of examination rooms and laboratories, and to Dr. John McCrae, Hon. Corresponding Secretary for the Transvaal, Prof. J. H. Stanley, Dr. W. E. Adeney and Prof. Sydney Young for supervising the local examinations.

Joseph Priestley.—On July 10th, 1917, Madame Belloc, the mother of Mr. Hilaire Belloc and granddaughter of Joseph Priestley, visited the Institute.

The Register.—The Council have decided that, in view of the continued absence of a very large number of the Fellows, Associates and Students from their ordinary addresses and the desirability of exercising economy, the Register of the Institute be not printed this year.

Presentation to the Registrar.—At the meeting of the Council held on April 27th, the President presented the Registrar with a silver rose bowl bearing the following inscription:

Presented to

RICHARD BERTRAM PILCHER,
By the President and Council of
The Institute of Chemistry of Great Britain and Ireland
in appreciation of 25 years' faithful service.
April, 1892—1917.

The President, in making the presentation, regretted that under the prevailing circumstances it had not been possible to invite the Members generally to participate in the gift, but the present Council and a few Members of former Councils who had been particularly acquainted with Mr. Pilcher's work had felt that the completion of 25 years in the office of the Institute should not be allowed to pass unnoticed.

The Registrar, in thanking the President and Council very cordially for their handsome gift, expressed his gratitude for the kindness extended to him by the officers, the Council and Members generally at all times during his long association with the Institute.

Obituary.

James Hector Barnes died from enteric fever on June 2nd, 1917, in his fortieth year. He received his scientific training at the University of Birmingham, taking the degree of B.Sc., and in 1905 became an assistant analyst in the Worcester County Laboratory. In the following year he returned to Birmingham as assistant to Prof. Frankland, with whom he remained for about seven months. He then joined the Indian Agricultural Service, in which he became Agricultural Chemist to the Punjab Government and Professor of Chemistry in the College of Agriculture, Lyallpur. Shortly after his death the Pass List of the University of Birmingham annour ced that he had been awarded the degree of D Sc. for a thesis on "The Insects Attacking Stored Wheat in the Punjab and the Methods of Combating Them," ivoluding a chapter on the Chemistry of Respiration. He passed the Examination for the Associateship of the Institute in 1905, and was elected a Fellow in 1908.

Corporal Joseph Arthur Brown was killed in action on April 20th, in his thirty-seventh year. Trained at University College, Nottingham, he was articled, in 1897, to Mr. John White, Public Analyst for Derbyshire, and in 1902 was appointed chief Assistant to Mr. R. A. Cripps, Public Analyst for Bournemouth. In 1910 he became chief assistant to Mr. C. C. Duncan, Public Analyst for the county of Worcester, relinquishing this post in 1914 in order to become assistant to Mr. J. F. Liverseege, City Analyst for Birmingham. He communicated several papers to the Society of Public Analysts and to the Chemical News. At the outbreak of war he enlisted in the 1st Birmingham Battalion. He was elected a Fellow of the Institute in 1904.

Captain Norman Phillips Campbell was killed in action on May 3rd, in his thirty-second year. He received his early training at Dulwich College, and proceeded to Balliol College, Oxford, where he obtained the degree of B.A., with 1st Class Honours in Chemistry, afterwards becoming Demonstrator at the College. He was subsequently appointed Professor of Science at Trinity College, Kandy, Ceylon. On the outbreak of war he returned to England and received a commission in the Oxford and Bucks Light Infantry, being transferred later to the Royal Engineers. He passed the final examination of the Institute in the branch of Physical Chemistry and was elected an Associate in 1908.

2ND LIEUT. JOHN ROBERTSHAW HILL was killed in action on May 6th, in his thirty-fourth year. He was educated at Bradford Grammar School, gaining an open foundation scholarship to St. John's College, Cambridge. In June, 1906, he graduated B.A., taking honours in chemistry in Part II. of the Natural Science Tripos, subsequently becoming a sistant demonstration.

strator and research student. In 1908 he became Assistant to Prof. W. R. Dunstan, C.M.G., at the Imperial Institute, and in 1910 was appointed Government Chemist at Kuala Lumpur, Federated Malay States. On resigning this appointment in 1913, he returned to England and carried out a research, at the Royal Institution, in connection with mangostin, the results of which were published in the Journal of the Chemical Society. At the outbreak of war he volunteered as a private in the 16th West Yorkshire Regiment, was transferred to the Royal Engineers in 1915, and received his commission in 1916. He passed the Final Examination in Mineral Chemistry and was elected an Associate of the Institute in 1909 and became a Fellow in 1913.

GEORGE CHRISTIAN HOFFMANN died at Ottawa, on March 6th, in his eightieth year. Born in London, he was educated partly in England and partly in Germany, until 1853, when he entered the Chemical Department of the Royal School of Mines—then situated in Jermyn Street. On the completion of his course, he acted for two years as junior assistant and for several years as research assistant to Prof. A. W. Hofmann. In 1861, he proceeded to Natal to take up work under Dr. R. J. Mann, Superintendent-General of Education in Natal, after which he visited Mauritius to acquire knowledge of the flora of that island. About ten months later he was appointed to take charge of the Phytochemical Laboratory attached to the Botanic Garden at Melbourne, a position he held for over five years, subsequently proceeding to Canada, where, in 1872, he was appointed Assistant Chemist and Mineralogist to the Geological Survey of Canada. In 1880 he was promoted Chemist and Mineralogist, and in 1883 Assistant Director, which position he held until his retirement in 1907. He was the author of numerous reports and papers, mainly relating to investigations of minerals conducted for the Survey. He was elected a Fellow of the Institute in 1879, and received the degree of Doctor of Laws (Honoris Causa) from Queen's University, Kingston, Canada, in 1895.

Robert Barnabas Pollitt died at Letchworth. Herts, on June 15th, in his fifty-second year. Born at Stretford, Laneashire, he was educated at Manchester Grammar School, and at the Manchester Technical School. In 1889 he became chief assistant to the late Oscar Guttmann, whom he assisted in the design and erection of the new factory of the National Explosives Co., and with whom he remained until 1896, when he was appointed manager of the works and laboratories of the New Explosives Co., Ltd., at Stowmarket. In 1900, he proceeded to South Africa, where he was works manager and head of the chemical laboratories at the De Beers Explosives Works, and about six years later, to Mexico, where he was manager of the Nobel Factory, at Dinamita, for three years. He then returned to England as manager for Messrs. Oscar Guttmann & Sons, from which position he retired, owing to failing health, in 1916. He was elected a Fellow of the Institute in 1901.

JOHN HENRY SMITH died on March 20th, at Manchester, in his fifty-eighth year. He was born at Kirkealdy, and received his scientific training at the Royal College of Science, Dublin, and under Prof. Lunge at the Zürich Polytechnicum, where he took the degree of Ph.D. After being engaged for a year by a firm in Milan on a process for the utilisation of tin scrap, he returned to England, and was appointed chemist to Messis. Mawson and Swan, of Newcastle, which position he held for some years. He subsequently proceeded again to Zürich, where he established a works for the

manufacture of photographic plates and papers, and, in 1908, installed a small manufactory in Paris for the production of Utocolour bleach-out papers, a subject to which he had devoted much time. For some months before his death he was engaged in research or phosphoric acid and the alkali phosphates at the Municipal School of Technology, Manchester. He was the author of several papers published in the Journal of the Society of Chemical Industry. He was elected a Fellow of the Institute in 1887.

Francis Sutton, who died at Norwich on April 16th, was the son of a veterinary surgeon. With a view to following his father's career and to acquiring a knowledge of drugs and medi inals before entering the Veterinary College, London, he was apprenticed to Mr. Harper, chemist and druggist, of Bank Plain, Norwich, but, being drawn to pharmacy and chemistry, completed his apprenticeship and, at the age of twenty, joined a former fellow-apprentice in business at Newcastle-on-Tyne, where he remained for three years, while he studied at the Durham College of Science. Having qualified as a pharmacist, he returned to Norwich in 1854, to ma rage the business with which he was originally associated, but becoming increasingly attracted to analytical chemistry, he retired from pharmacy and later became Public Analyst to the County of Norfolk and other authorities. He was also consulting chemist to the local agricultural associations and, being specially interested in fertilisers, founded in 1870 a chemical manure and acid works at Runham, Great Yarmouth, which he managed until 1893, when he disposed of it to Messrs. Prentice Bros., Ltd. He was for many years a Member of the Council of the Pharmaceutical Society of Great Britain and one of the founders of the British Pharmaceutical Conference. In 1874, he represented British pharmacy at the International Pharmaceutical Congress at St. Petersburg, being a corresponding Member of the Imperial Pharmaceutical Society of that City and also of the Apotheker Verein, of Vienna. He is known chiefly for his work on "Volumetric Analysis," which is generally accepted as a standard work on the subject. The first edition appeared in 1862; a French translation of the fourth edition was published in Paris in 1883; and the eleventh English edition is now in preparation under the editorship of his son, Mr. W. L. Sutton, and Mr. A. E. Johnson. He also contributed many papers to the Chemical News and other scientific journals. He was an Original Fellow of the Institute.

THOMAS UTRICK WALTON died at Sydney, N.S.W., on February 1st, 1917, at the age of sixty-four years. He was born at Greenock, and received his early training at the Greenock Academy. He then proceeded, for his scientific training, to Glasgow University, where he graduated B.Sc. After a few years' practical experience as chemist in sugar refineries at Greenock, he joined the staff of the Colonial Sugar Refining Co., Ltd., of Sydney, N.S.W., of which firm he was Chemist-in-Chief from 1880 to the time of his death. He published a number of papers on chemical subjects, but his most noteworthy achievement was the part he took in carrying out the wishes of the directors of his company in introducing the system of chemical control into their manufacturing operations, a system of which the development has had an all-important influence on the Australian sugar industry. Many of his pupils are now managers of the Colonial Sugar Company's establishments in Australia, New Zealand, and Fiji, and at the time of his death about 120 trained chemists were employed by the firm. He was elected a Fellow of the Institute in 1880.

Abstract of the

Report of the Board of Examiners

ON THE

INTERMEDIATE AND FINAL EXAMINATIONS. JULY, 1917.

BOARD OF EXAMINERS.

Chairman: Sir James Johnston Dobbie, LL.D. (Glas.), D.Sc. (Edin.), F.R.S., President.

For the Intermediate Examination and in General Chemistry:
Arthur Harden, D.Sc. (Vict.), Ph.D. (Erlangen), F.R.S., Vice-President.

For the Final Examination:

- (a) Mineral Chemistry ... George Nevill Huntly, B.Sc., A.R.C.S. (Lond.), F.I.C.
- (b) Metallurgical Chemistry... Cecil Henry Desch, Ph.D. (Würzburg), D.Sc. (Lond.), F.I.C.
- (c) Physical Chemistry ... Frederick George Donnan, M.A. (Q.U.B.),
 Ph.D. (Leipzig), F.R.S., F.I.C.
- (d) Organic Chemistry ... William Jackson Pope, M.A. (Cantab.), F.R.S., F.I.C.
 (e) The Chemistry (and Micro-Bernard Dyer, D.Sc. (Lond.), F.I.C.
- (e) The Chemistry (and Microscopy) of Food and Drugs, Fertilisers and Feeding Stuffs, Soils and Water.

and Enzyme Action.

Therapeutics. Pharmacology and Microscopy.

(Lond.), M.A. (Cantab.), F.R.S., F.I.C.

(f) Biological Chemistry, Bacteriology, Fermentation Alfred Chaston Chapman, F.I.C.

The Board report that the Examinations were held at the places and on the dates mentioned below:—

Intermediate Examination: At the Institute July 3rd to 6th.

Final Examination: Branch (a): At the Institute, July 2nd to 6th.

Branch (d): At the Institute, and at the Royal College of Science for Ireland, Dublin, July 2nd to 6th.

Branch (e): At the Institute, July 2nd, and in the Laboratory of Dr. Bernard Dyer, July 3rd to 7th.

The results are shown in the following table:-

1	NUMBER		NUMBER
E	AMINED		PASSED.
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	2		1
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(vgc			
137			
	1		1
	1		1
			-
	17		9
	_		_
	 	4 2 9 1 1	4 2 9 1 1

In Branch (d) one Candidate withdrew on the morning of the first day and another presented no records for the last three days' practical work. Only two Candidates passed. The Board observe a tendency for Candidates in this branch to present themselves for examination without having attained a standard of theoretical knowledge or having acquired an amount of practical experience such as is expected of Candidates for the Associateship.

The following Candidates passed the Intermediate Examination:

Baines, Edward Robinson	•••	School of the Pharmaceutical Society and King's College, London.				
Caird, Miss Ella	,	School of the Pharmaceutical Society and King's College, London.				
Craven, William Henry		B.Sc. (Lond.), University College, Not- tingham.				

Dando, Arthur James East London College; and with G. T. Holloway, A.R.C.S., F.I.C.

Candidates who passed the Final Examination for the Associateship (A.I.C.):

In Branch (a), Mineral Chemistry.

Hegan, Horace James ... B.Sc. (Lond.). The University, Birmingham.

In Branch (d), Organic Chemistry.

Hall, Archibald John B.Sc. (Lond.). With J. B. Coleman, A.R.C.S.I., F.I.C.

Rogers, Sidney John B.Sc. (Lond.).

In Branch (e), The Chemistry (and Microscopy) of Food and Drugs, Fertilisers and Feeding Stuffs, Soils and Water.

Jephcott, Harry...

 B.Sc. (Lond.).
 Finsbury Technical College and King's College, London; and with Dr. Ber-†Taylor, George... nard Dyer, F.I.C.

† For the Fellowship.

A Candidate examined for the Fellowship at Johannesburg in May last, taking Branch (b), Metallurgical Chemistry, also satisfied the Board.

Adam, Hector Robert ... B.Sc. (Aberd.). Aberdeen University.

PAPERS SET AT THE JULY EXAMINATIONS. Intermediate Examination.

GENERAL AND THEORETICAL CHEMISTRY.

TUESDAY, JULY 3rd, 1917: 10 a.m. to 1 p.m.

- 1. Explain as fully as you can why the molecule of gaseous oxygen is supposed to contain two atoms of oxygen and that of ozone three atoms of oxygen.
- 2. Give an account of the allotropic forms of sulphur, indicating the modes of preparation, the properties and, as far as possible, the range of stability of each form.
- 3. Explain how the electrical conductivity of a solution can be determined, and briefly discuss the mechanism of electrical conductivity in dilute solutions of salts.
- 4. Write a short essay on " Modern aspects of the classification of the elements."

- 5. Give a short general account of the chemistry of the peroxides, peracids and per-salts, and describe the preparation and properties of one representative of each of these classes.
- 6. Give a short account of the metallurgy of one of the following metals, including an account of its chief ores and alloys: (a) zinc; (b) tin; (c) lead.

2 p.m. to 5 p.m.

1. State how you would detect the presence of the following elements or groups in organic compounds and describe quantitative methods for the estimation of any three of them: (a) bromine; (b) sulphur; (c) 'NH₂; (d) the aldehyde group. 'CHO; (e) 'SO₂H; (f) 'CN; (g): N'OH;

(h) 'OCH3.

- 2. Write a short essay on one of the following subjects:
- (a) Dynamic isomerism. (b) The Walden inversion.

(c) The glucosides.

- 3. Explain as fully as you can the grounds on which the accepted formulæ for (a) citric acid, (b) pyridine, are based.
- 4. Discuss the phenomena of stereoisomerism (geometrical isomerism) in unsaturated and cyclic compounds.
- 5. Describe how you would carry out the qualitative analysis of a silicate containing iron, aluminium, calcium, magnesium, sodium and potassium, and explain carefully the significance of each step in the process.
- 6. Give a short account of the analytical processes available for the detection and estimation of (a) nitric acid, (b) phosphoric acid.

PRACTICAL CHEMISTRY.

WEDNESDAY, JULY 4th, 1917: 10 a.m. to 4.30 p.m.

1. Report on the qualitative and quantitative composition of the inorganic material, A. (Sodium sesquicarbonate.)

2. From the alloy, B, prepare samples of the sulphates of the two metals

which form its chief constituents. (Brass.)

THURSDAY, JULY 5th, 1917: 10 a.m. to 4.30 p.m.

- 1. The solution, C, contains two forms of organically combined nitrogen. Estimate the total amount of nitrogen present, expressing your result in grams of nitrogen per litre, and ascertain qualitatively the forms in which it occurs.
- 2. Estimate the percentage by weight of alcohol contained in the liquid, D, by distilling and determining the specific gravity of the distillate.

FRIDAY, JULY 6th, 1917: 10 a.m. to 4.30 p.m.

1. From the organic base E prepare the acetyl derivative; determine its melting point and estimate the percentage amount of acetic acid which

it yields when hydrolysed by caustic soda. (Methyl aniline.)

2. Ascertain what elements are present in the substance F and make a short study of its chief properties. (Chloramine-T.; i.e, p-toluene

sodium sulphochloramide.)

Final Examinations for the Associateship.

Branch (a).- Mineral Chemistry.

MONDAY, JULY 2nd, 1917: 10 a.m. to 1 p.m.

1. Describe the preparation and properties of the phosphoric acids and their chlorides. State the structural formulæ usually assigned to the acids and give the reactions on which these formulæ are based.

2. Give an account of the methods in use for the liquefaction of gases. Mention any gases now being made on the large scale by processes involving liquefaction and indicate the directions in which the gases so prepared are

utilised.

3. Describe the application of electrolytic methods to the preparation of lead peroxide, cuprous oxide, and chlorine. Mention some industrial uses of these substances.

 Give a detailed account of any recent atomic weight determination, indicating the chief sources of error and the means adopted for their elimina-

tion.

5. A hard boiler scale, containing calcium carbonate, hydroxide and sulphate with silica and magnesia, was softened and removed by the addition of sodium fluoride to the feed water. Give an account of the chemical reactions involved and draw up a scheme for the analysis of the sludge.

6. Write a short essay on one of the following:

(a) The ammine derivatives of divalent metals and the theory of auxiliary valencies.

(b) Recent work on the compounds of boron.

(c) The theory of the producer and water gas reactions.

TUESDAY, JULY 3rd, 1917: 10 a.m. to 4.30 p.m.

1. Determine the impurities in the sample of spelter A.

2. Prepare a sample of pure indine pentovide from indine.

2. Prepare a sample of pure iodine pentoxide from iodine.

WEDNESDAY, JULY 4th, 1917: 10 a.m. to 4.30 p.m.

Make a qualitative analysis of the sand B, paying special attention to the possible presence of titanium, molybdenum, tungsten, zirconium, and the monazite earths (concentrate from auriferous gravel).

THURSDAY, JULY 5th, 1917: 10 a.m. to 4.30 p.m.

1. Determine two constituents of the sand (after consulting the examiner).

2. Prepare a specimen of pure dry iodine from one-half of your iodine pentoxide.

FRIDAY, JULY 6th, 1917: 10 a.m. to 4.30 p.m.

Determine the amounts of potassium perchlorate, potassium chlorate and potassium iodate in the given mixture.

Branch (d).—Organic Chemistry.

MONDAY, JULY 2nd, 1917: 10 a.m. to 1 p.m.

1. Discussion has often arisen as to the possible existence of compounds in which two hydroxyl groups are attached to the same carbon atom.

Give an account of the experimental facts upon which such discussions are based.

2. Describe briefly the preparation and properties of the technically important compounds which can be prepared by the condensation of phthalic anhydride with meta-di-derivatives of benzene.

3. What is meant by steric hindrance? Show, with the discussion of specific cases, how the preparation of organic compounds is frequently

influenced by the occurrence of steric hindrance.

4. What methods are available for the preparation of the nitro-derivatives of (a) the paraffins and (b) the aromatic hydrocarbons? Compare the properties of these two classes of compounds, illustrating your answer by

the quotation of appropriate examples.

5. Describe in outline satisfactory methods for preparing (a) benzene from hexamethylene, (b) stearic acid from oleic acid, (c) racemic acid from d-tartaric acid, (d) oxaluric acid from parabanic acid, (e) quinaldine from aniline, (f) coumarin from salicylic aldehyde, and (g) phthalic acid from naphthalene.

TUESDAY, JULY 3rd, 1917: 10 a.m. to 4.30 p.m.

Identify the organic compound A and hand in specimens of characteristic derivatives prepared from it. (Oenanthaldehyde.)

WEDNESDAY, JULY 4th, 1917: 10 a.m. to 4.30 p.m.

You are provided with 20 grams of sulphanilic acid. Prepare from this a purified specimen of phenylhydrazine-p-sulphonic acid and use a part of your preparation in the production of two other crystalline products. Samples of all your preparations should be submitted for examination.

THURSDAY, JULY 5th, 1917: 10 a.m. to 4.30 p.m.

Make an examination of the technical product B and state what you can as to (a) its origin, (b) its composition, and (c) its possible uses. (Shale oil.)

FRIDAY, JULY 6th. 1917: 10 a.m. to 4.30 p.m.

Prepare the aurichloride of the given alkaloid C and, from a determination of the percentage of gold in this salt, calculate the molecular weight of the alkaloid. (Strychnine.)

Branch (e).—The Chemistry and Microscopy of Food and Drugs, Fertilisers and Feeding Stuffs, Soils and Water.

MONDAY, JULY 2nd, 1917: 10 a.m. to 1 p.m.

1. Assume that you have found a sample of table syrup to contain arsenic in the proportion of 1/50th of a grain per pound, and that a local authority, contemplating proceedings against the vendor, consults you as to whether it is desirable to proceed under section 3 or under section 6 of the Sale of Food and Drugs Act. What advice would you give, and why? (A copy of the Act is supplied for reference.)

2. Describe as closely as possible how you would detect and determine the proportion of earth-nut (Arachis) oil in a sample of olive oil adulterated

therewith.

3. What do you understand by "albuminoid ratio"? Say generally how this may be controlled or varied in regulating the diet of farm stock, mentioning some forms of purchasable feeding stuffs especially useful in this connection.

(Answer in a separate book.)

4. Enumerate the pharmacopæal preparations of Cinchona bark and of Quinine. How would you proceed to estimate: (a) the total alkaloids

and (b) the Quinine in a sample of bark?

5. What percentage of the respective active principles should be present in the following preparations when standardised as the pharmacopæia directs: Extractum Opii; Extractum Nucis Vomicæ Liquidum; Tinctura Nucis Vomicæ; Extractum Belladonnæ Liquidum; Vinum Ipecacuanhæ; Aqua Laurocerasis?

6. Give some account of the effects of chronic poisoning by lead and

discuss the various circumstances under which it may arise.

2 p.m. to 5 p.m.

1. Describe the various constituents present in the suspended matters

in the water A. Make drawings of the structures you describe.

2. The material B represents the contents of a human stomach. Decide whether the amount of free HCl it contains is sufficient to prove that acid had been swallowed.

3. What cereals are present in the sample of flour C?

TUESDAY, JULY 3rd, 1917: 10 a.m. to 4.30 p.m.

1. Make a full analysis of the sample of commercial Saltpetre. (This may be finished to-morrow.)

2. Examine the sample of Pepper and report as to its genuineness.

WEDNESDAY, JULY 4th, 1917: 10 a.m. to 4.30 p.m.

1. Finish the analysis of Saltpetre.

2. The Medicine supplied is supposed to have been dispensed from the accompanying prescription. Analyse it, and report on the accuracy or otherwise of the dispensing.

THURSDAY, JULY 5th, 1917: 10 a.m. to 4.30 p.m.

1. Examine the sample of Lard Substitute, and indicate how you would report upon it if it were submitted to you under the Sale of Food and Drugs Act.

2. Examine as fully as you can in the time at your disposal the given

sample of Honey.

FRIDAY, JULY 6th, 1917: 10 a.m. to 4.30 p.m.

1. Analytical data and bacteriological results are supplied to you regarding a sample of Drinking Water. Write a short report on it.

2. Write out certificates (applicable to samples taken under the Sale of

2. Write out certificates (applicable to samples taken under the Sale of Food and Drugs Act) from the analytical data supplied, relating to samples of Coffee, Milk and Butter.

3. The drinking of wine represented by the sample submitted to you is supposed to have been followed by sudden sickness. In the light of this information, examine and report upon the sample.

Candidates for the Final Examination were required to translate passages from French and German technological literature.

TRANSLATION

Time allowed: 2 hours.

Translate into English.

Bei verschiedenen Gelegenheiten haben wir in den vorhergehenden Kapiteln den eigentümlichen Einfluss erwähnt, den die Anwesenheit von Stoffen, die anscheinend garnichts mit den besprochenen Reaktionen zu schaffen haben, auf die Geschwindigkeit der Umsetzung ausübt. Eine praktisch ausserordentlich wichtige Rolle spielen, wie wir gesehen haben, die "Reaktionsbeschleuniger" beim Schwefelsäurekontaktverfahren, das durch sie erst möglich gemacht wurde. Besonders auffällig ist bei dieser Wirkung die Tatsache, dass oft sehr kleine Mengen des Reaktionsbeschleunigers genügen, um grosse Mengen der reagierenden Stoffe in der gewünschten Weise umzuwandeln.

Berzelius hat 1835 diese Eigenschaft als katalytische Kraft bezeichnet und sie folgendermassen näher umgrenzt:—

"Die katalytische Kraft scheint darin zu bestehen, dass Körper durch ihre blosse Gegenwart und nicht durch ihre Verwandtschaft die bei dieser Temperatur schlummernden Verwandtschaften zu erwecken vermögen."

Da es nach dem Gesetze von der Erhaltung der Energie unmöglich ist, dass durch die blosse Gegenwart eines Körpers, der selber keine bleibenden Anderungen erleidet, eine mit Energieumsetzung verbundene Umwandlung bewirkt wird, so kämpfte Ostwald energisch gegen die falsche Auffassung an, dass durch "Katalysatoren" Reaktionen bewirkt würden, die nicht auch ohne sie verlaufen könnten. Ostwald stellte den Satz auf, dass durch den Katalysator das Gleichgewicht eines Systems nicht verschoben, sondern nur die Geschwindigkeit geändert wird, mit der sich das Gleichgewicht einstellt. Einen experimentehen Beweis für die Richtigkeit dieses Satzes haben wir schon gelegentlich auf Seite 35/36 erhalten. Die Definition des Katalysators gestaltet sich nun folgendermassen:—

"Ein Katalysator ist jeder Stoff, der ohne im Endprodukt einer chemischen Reaktion zu erscheinen, ihre Geschwindigkeit ändert."

Kurt Arndt.

Action de l'ozone sur la respiration.—L'ozone, par suite de ses propriétés oxydantes énergiques, est dangereux à respirer à des doses élevées.

Il peut alors occasionner des picotements de la gorge, de la toux, de l'oppression de poitrine, des nausées, des vomissements et un trouble général dans l'organisme.

A faible dose, ces accidents ne se produisent pas, et l'air atmosphérique qui en renferme des quantités très faibles, produit au contraire par sa présence, des effets salutaires, ce qui fait rechercher l'air de la mer, des montagnes ou de la campagne.

Par l'ozone qu'il contient, l'air même à sa dose maximum de $\frac{1}{450000}$ de son poids, est un excitant utile.

Autrefois, on considérait que respirer au maximum 0g,002 d'ozone était

suffisant pour provoquer un spasme des bronches, une irritation des organes respiratoires, une altération remarquable des poumons et des troubles graves dans tout l'organisme.

Scheenbein prétend avoir constaté la mort d'un chien qui n'avait pas respiré plus de 2 milligrammes d'ozone contenus dans de l'air ozoné, l'autopsie révéla que l'animal avait les poumons fortement rouges, et toutes les membranes muqueuses des organes respiratoires présentaient une inflammation prononcée.

Sous l'influence de l'ozone qui peut être comparé à de l'oxygène extrêmement actif, il se produit avec ce corps ce qui a lieu avec de l'oxygène pur ordinaire.

Un chien qui respire cet oxygène finit par périr par suite de l'inflammation des organes respiratoires.

Cette dose de 0gr,002 d'ozone, qui était considérée comme nuisible à l'organisme humain, a été établie d'après les resultats d'expériences faites avec les moyens dont disposaient à l'époque les expérimentateurs pour produire ce gaz.

Ce gaz devait surtout son énergique action funeste aux impuretés qu'il renfermait dues aux modes primitifs de préparation ainsi qu'aux manières d'opérer.—De la Coux.

FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERVING OR WHO HAVE SERVED WITH H.M. FORCES.

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

ADDITIONS TO LIST.

FELLOWS.

Dick, W. D., Lieut. R.A.M.C. James, B. R., R.N.A.S.

ASSOCIATES.

Barnett, E. de B., Conducteur Service de Santé Militaire, Ambulance Alpine, French Army.

Illingworth, S. R., Lieut. A.O.D.

Raper, H. S., Major R.A.M.C.

Scott, A. W., O.T.C., Artists' Rifles.

STUDENTS.

Benstead, T. B., A.S.C.

Bentley, T. L. J., Royal W.S. Regiment.

Bray, G. T., 2nd Lieut. R.E.

Brown, L. N., 2nd Lieut. R.E.

Condrup, C. O., R.E.

Crawford, A. B., A.O.C.

Davey, W. S., 2nd Lieut. A.O.D.

Farrer, W. J. G., London Electrical Engineers.

King, John, Lieut. Lincolnshire Regiment (Mentioned in despatches).

Pechey, W. G., Corporal Leicester Regiment.

Smith, A. M., Training Reserve Battalion.

Smith, J. S., Officer Cadet Battalion.

Southerton, L. C., R.N.A.S.

Stickings, R. W. E., Captain A.S.C.

Winbolt, E. A., R.N.A.S.

Since the publication of the list given in Proceedings, Part II., entries have been altered in the following cases:—

FELLOWS.

Auld, S. J. M., Captain, Deputy Assistant Director Gas Services (Military Cross).

Bruce, R., Captain R.E.

Campbell, L. E., 2nd Lieut. A.O.D.

Clement, L., Sergeant R.E. (Ministry of Munitions).

Evans, B. S., Lieut. The Queen's (Military Cross).

King, F. E., Lieut. Assistant Chemical Adviser.

McDonald, Donald, Lieut. General List (Ministry of Munitions).

Monier-Williams, G. W., Major, Chemical Adviser (Military Cross).

Summerson, S., Captain R.A.M.C.

ASSOCIATES.

Browning, R. G., Lieut. R.E.

Bunker, S.W., Major Royal Fusiliers, attached R.E. (Mentioned in despatches. Cavalier of the Order of St. Maurice and St. Lazarus).

Campbell, N. P., Captain R.E. (killed in action).

Doidge, R. M., Company Sergeant-Major R.E.

Martin, E. C., Sergeant R.A.M.C.

Norris, W. H. H., Lieut. R.E. (Ministry of Munitions).

Thurston, F. S., 2nd Lieut. General List.

STUDENTS.

Beesley, R. M., 2nd Lieut. R.E.

Berridge, J. D., Lieut. R.E.

Boyd, G., 2nd Lieut. R.E. (killed in action).

Butler, F. H. C., Captain Hampshire Regiment, Assistant Provost-Marshal, Mesopotamian E. F.

Day, F., Cadet Artillery.

Follows, G. S., Lieut. King's Liverpool Regiment.

Hodgkin, A. E., Captain, Chemical Adviser.

Hoff, R. W., R.E.

Morrison, N., Lieut. R.E.

Whitham, R. P. M., Lieut, Northumberland Fusiliers (Military Cross).

CANDIDATES FOR EXAMINATION.

Child, A. J., Brigade Major (Captain London Regiment, attached R.F.C.). Templeman, W. H., 2nd Lieut. A.O.D.

The Register.

Since the publication of Proceedings, Part II., 1917, the Council have elected 20 Fellows and 4 new Associates; 13 Associates have been elected to the Fellowship, and 22 new Students have been admitted. The Institute has lost II Fellows, I Associate, and 3 Students by death.

New Fellows.

Adam, Hector Robert, B.Sc. (Aberd.), The South African School of Mines and Technology, P.O., Box 1176, Johannesburg, South Africa.

Carmichael, John, 62, Norroy Road, Putney, London, S.W. 15.

Chance. Kenneth Macomb, M.A. (Cantab.), British Cyanides Co., Ltd., 49, Queen Victoria Street, London, E.C. 4.

Craig, Robert James, B.Sc. (Melbourne), H.M. Factory, Queen's Ferry, Chester.

Elliot, Thomas Gifford, Hillcote, Park Edge, Hathersage, viâ Sheffield.

Goldsmith, John Naish, M.Sc. (Manc.), Ph.D. (Heidelberg), 67, Chancery Lane, London, W.C. 2.

Haworth, John, 31, Grove Road, Millhouses, Sheffield.

MacDonald, George William, M.Sc. (Melbourne), Whitefriars, Rochester, Kent.

Martin, Geoffrey, D.Sc. (Lond.), D.Sc. (Bris.), Ph.D. (Rostock), 21, Hamilton Crescent, Palmer's Green, London, N.

Methley, Bernard Willoughby, Ferndale, Moorgate, Rotherham, Lancs.

Rees, Walter James, 75, Wentworth Road, Harborne, Birmingham.

Reynolds, William Colebrook, B.Sc., A.R.C.S. (Lond.), Wharfedale, Upminster, Essex.

Rodger, Robert, 4, Stevenage Road, Bishop's Park, Fulham, London, S.W. 6. Taylor, George, 17, Great Tower Street, London, E.C. 3.

Tinkler, Charles Kenneth, B.Sc. (Wales and Lond.)., D.Sc. (Birm.), King's College for Women (Household and Social Science Department), Campden Hill Road, London, W. 8.

Travers, Morris William, D.Sc. (Lond.), F.R.S., Beacon Hall, Priory Gardens, Highgate, London, N. 6:

Watson, James, M.Sc. (Dun.), Kinross, Ings Road, Hull.

Williams, John, The Department of Science and Agriculture, Georgetown, Demerara, British Guiana. Wilsmore, Professor Norman Thomas Mortimer, D.Sc. (Melbourne), Ministry of Munitions of War, Department of Explosives Supply, Storey's Gate, Westminster, London, S.W. 1.

Worthington, Arthur, Lynwood, Great Lever, Bolton.

Associates Elected to the Fellowship.

Arup, Paul Seidelin, B.Sc. (Lond.), A.C.G.I., 15, Ducie Street, Prince's Park, Liverpool.

Dev, Biman Bihari, D.Sc. (Lond.), Presidency College, Calcutta, India.

Fagan, Bernard Goulding, B.A., B.Sc. (N.U.I.), A.R.C.S.I., City Laboratory, Chatham Row, Dublin.

Gilling, Charles, B.Sc. (Lond.), 9, Alwyne Mansions, Wimbledon, London, S.W.

Hoyland, Francis William, County Laboratories, Chapel Lane, Hull.

Jones, Edward Towyn, M.Sc. (Wales). County School, Blaenau Festiniog, North Wales.

Knight, Reginald Sydney Gilbert, A.R.C.S., B.Sc. (Lond.), 20, All Saints' Road, Gloucester.

Maude, Aylmer Henry, c/o Canadian Explosives, Ltd., Nanaimo, British Columbia.

Napper, Sidney Scrivener, A.C.G.I., Latmos, 40, Warwick New Road, Leamington.

Potter, Howard Vincent, B.Sc. (Lond.), The Damard Lacquer Co., Ltd., 98, Bradford Street, Birmingham.

Sharp, David Easton, B.Sc. (Aberd.), e/o Mr. Caldwell, Blackford, Saltcoats, Ayrshire.

Sutherland, Miss Maggie Millen Jeffs, D.Sc. (Glas.), The Royal Technical College, Glasgow; and St. Margaret's, Lenzie.

Williams, Edward, Japanese Explosives Co., Hiratsuka, Sagami, Japan.

New Associates.

Hall, Archibald John, B.Sc. (Lond.), 50, Fitzroy Read, Primrose Hill, London, N. W. 1.

Hegan, Horace James, B.Sc. (Lond.), 70, Howarth Road, Plumstead, London, S.E.

Jephcott, Harry, B.Sc. (Lond.), 43, King Henry's Road, Hampstead, London, N.W. 3.

Rogers, Sidney John, B.Sc. (Lond.), 137, Clements Road, East Ham, London, E. 6.

New Students.

Barber, Harold Hayden, c/o Mr. Wright, 1, Devonshire Road, Stratford, London, E.

Belasco, Harry George, Temple Cottage, Hereson Road, Ramsgate.

Bockett, Eric John Cuming, Naseby, 89, King Charles' Road, Surbiton, Surrey.

Burns, Alan Chamby, 6, High Street, Whitehaven, Cumberland.

Campbell, Hugh Hannay, 3, Winton Place, Tranent, Scotland.

Childs, Charles Bernard, 19, Vicarage Road, Handsworth, Birmingham.

Davey, 2nd Lieut. Wilfrid Shacklock, 19, Ambrose Avenue, Golder's Green, London, N.W.

Doyle, Arthur Lawton, B.Sc. (Shef.), 28, Greenhill Road, Woodseats, Sheffield.

Fallows, Leonard, 18, Claremont Road, Bishopston, Bristol.

Gilpin, Arthur, 88, Seymour Road South, Clayton, Manchester.

Glasspoole, John, B.Sc. (Lond.), 16, Pursers Cross Road, Fulham, London, S.W.

Howard, Herbert Leslie, The Ferns, 14, South-Eastern Road, Ramsgate.
Jones, Frank Butler, B.A. (Cantab.), 124, Inderwick Road, Crouch End,
London, N. 8.

Lighton, Charles, 14, Loddiges Road, Hackney, London, E. 9.

Muddiman, Ernest Walter, 52, Tanfield Road, Birkby, Huddersfield, Yorks.

Ogilvie, Cyril Barker, 17, Sollershott W., Letchworth, Herts.

Ogilvie, Stanley Hine, 17, Sollershott W., Letchworth, Herts.

Scrase, Frederick John, B.Sc. (Lond.), 234, Battersea Park Road, London, S.W. 11.

Smith, William, 71, Bellevue Road, Edinburgh.

Welch, Frank Robert, 40, Station Street East, Foleshill, Coventry.

Weston, Arnold, 26, Clifton Street, Blackpool.

Wigfield, Joshua Biram Crossley, 5, Gladstone Terrace, Grantham.

DEATHS.

Fellows.

Baker, Sub-Lieut. Montague Samuel (killed in action). !

Barnes, James Hector, B.Sc. (Birm.).

Brown, Joseph Arthur (killed in action).

Hill, 2nd Lieut. John Robertshaw, B.A. (Cantab.) (killed in action).

Hoffmann, George Christian, Hon. LL.D. (Queen's University, Canada).

MacIvor, Ralph Waldo Emerson.

Ollerenshaw, Samuel.

Pollitt, Robert Barnabas.

Smith, John Henry, Ph.D. (Zürich), A.R.C.S.I.

Sutton, Francis.

Walton, Thomas Utrick, B.Sc. (Glas.).

Associate.

Campbell, Captain Norman Phillips, B.A. (Oxon.)

Students.

Hayward, 2nd Lieut. Charles Oswald (died on Service). Kind, Robert Gordon (killed in action). Patterson, Arnott Andrew (died of wounds).

General Notices.

Examination in Biological Chemistry, Bacteriology, Fermentation, and Enzyme Action:

October, 1917.

An examination in Biological Chemistry, Bacteriology, etc., will commence on Monday, October 2nd, 1917.

This examination will be open to Fellows and Associates, to candidates whose applications for admission to the Final Examination have been accepted by the Council, and to candidates who have passed the Intermediate Examination of the Institute, provided in each case that they produce evidence, satisfactory to the Council, of having taken a course in Elementary Biology, as defined in the Regulations.

The examination extends over five days and may be theoretical and practical, written and oral. The syllabus includes Biological Chemistry, Bacteriology, Fermentation and Enzyme Action, with special reference to the Chemistry and Bacteriology of Food Stuffs, Water Supply and Sewage Disposal, and the application of Biological Chemistry to Industries and Manufactures.

The list of candidates for this examination will close on Tuesday, September 11th, 1917.

Candidates intending to enter for this examination are recommended to study the following subjects:—

The morphology, physiology, and life history of bacteria, yeasts, and moulds, in their relation to food, water supply, the treatment of sewage, agriculture, and the fermentation industries. (A special study of pathogenic organisms is not demanded, but the candidate should acquire a knowledge of such as are of importance in relation to food and to water supply.) Enzymes and their actions. The proteins and their decomposition products. The methods employed in the examination and estimation of the carbo-hydrates. The chemistry of waters, sewage liquors and effluents.

The chemistry of brewing and other fermentation industries. Practical work should include:—(a) general bacteriological methods and preparation of pure cultures; (b) microscopy; the staining and mounting of preparations, and the recognition of species; (c) changes caused by microorganisms.

Candidates are also advised to use every opportunity of becoming practically acquainted with the various technical problems which are dependent for their solution on a knowledge of Biological Chemistry, and to supplement their reading by visits to works such as breweries, dairies, tanneries, sewage works and water works. As very few courses in biology or botany include any reference to the commoner organisms occurring in water and sewage, students are recommended to make their own observations in those departments of biological investigation.

Examinations in Chemical Technology, October, 1917.—The Chemical Technology Examination Board will be prepared to hold an examination in October next. The exact date will be announced later.

The list of candidates will close on Tuesday, September 11th, 1917.

Full information can be obtained from the Registrar.

Notice to Associates. — Associates elected prior to August, 1914, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, can obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in securing appointments for qualified chemists.

The Laboratories.—The Laboratories of the Institute of Chemistry are available for the use of other Institutions for

examination purposes, on terms to be obtained from the Registrar.

The Library.—The Library is open for the use of Fellows, Associates and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. to 2 P.M.), except when examinations are being held.

Research Department.—The following reports have recently been produced by the Department of Scientific and Industrial Research and published by H.M. Stationery Office:—

(i.) A Report on Industrial Research in the United States of America, by A. P. M. Fleming. 1s.

(ii.) A Report on the Resources and Production of Iron and other Principal Metalliferous Ores, used in the Iron and Steel Industry of the United Kingdom, prepared by G. C. Lloyd. 2s.

Memorial to the late Sir William Ramsay.-Steps are being taken to raise a fund of £100,000 to establish a memorial to the late Sir William Ramsay: (1) by the provision of Research Fellowships; and (2) by founding a laboratory of Engineering Chemistry in connection with University College, London, where Sir William was Professor of Chemistry for twenty-six years. An appeal, signed by Mr. Asquith (as President of the Fund), the Prime Minister, Lord Gainford, Lord Rayleigh, Lord Reay, Lord Rosebery, Mr. Herbert Fisher, Sir J. J. Thomson, Sir Hugh Bell (Chairman of the Executive Committee), and Lord Glenconner, has been issued and addressed especially to friends and past students of the late Sir William Ramsay, and to those who are interested in chemistry and its applications to industry. Contributions should be forwarded to the Hon. Treasurers, Ramsay Memorial Fund, University College, Gower Street, London, W.C. 1.

PRESENT POSITION OF THE BUILDING FUND.

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30, Russell Square, London, W.C. 7th August, 1917. THE

INSTITUTE OF CHEMISTRY OF

GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

PROCEEDINGS.

1917.

PART HH.

PROCEEDINGS OF THE COUNCIL (JULY-NOVEMBER, 1917).
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH;
FUEL RESEARCH BOARD; BOARD OF SCIENTIFIC
SOCIETIES; THE NITROGEN PROBLEM.

WITH THE FORCES. (SUPPLEMENTARY LIST.)

THE REGISTER.

NOTICES: JANUARY EXAMINATIONS; APPOINTMENTS REGISTER; NOTICE TO ASSOCIATES.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary.

30, Russell Square, London, W.C. 1.

November, 1917.

Proceedings Committee, 1917=18.

HORATIO BALLANTYNE (Chairman),
SIR JAMES J. DOBBIE (President),
M. O. FORSTER,
ALEXANDER LAUDER,
D. NORTHALL-LAURIE,
P. A. ELLIS RICHARDS,
W. H. ROBERTS,
W. LINCOLNE SUTTON,
THOMAS TICKLE.

Proceedings of the Council.

JULY-NOYEMBER, 1917.

Glass Research.—At the meeting of the Council held on October 26th the Glass Research Committee reported the following additional formulas:-

XXXVII. (53).—Glass intermediate between soft soda glass and the glass for holding tungsten wires. (See XXXVIII. (54).)

XXXVIII. (54).—Glass designed to hold tungsten wire sealed into it, required for the manufacture of certain electric lamps.

XXXIX. (55).—Glass suitable for the manufacture of vessels used in preserving meat, etc.

(The Roman figures denote the numbers of the formulas reported since the Committee received grants in aid from the Advisory Council on Scientific and Industrial Research.)

Correspondence has passed with the Department of Scientific and Industrial Research with reference to the future arrangements for the conduct of research on laboratory and optical glass, cements for lenses, etc. In order to regularise the procedure with regard to grants, the Department finds it necessary to arrange that researches for which it is to provide the whole of the cost should be directed by a Committee of the Department with one of its officers as Secretary. This arrangement will now be made with regard to (I) the preparation of a reference list of vitreous compounds, and (2) research on cements for prisms and lenses.

The new Committee will be composed of or selected from the same personnel as the Glass Research Committee of the Institute, the closest collaboration being maintained between

the two Committees.

The Glass Research Committee of the Institute will continue its work until the conclusion of the financial year of the Institute on December 31st, 1917, when the position will be reviewed by the Department and the Institute.

The scheme for testing laboratory ware prepared by the Committee has been under the consideration of the Director of the National Physical Laboratory. The main scheme, as agreed between the Glass Research Committee and the National Physical Laboratory, will be published in due course.

Porcelain.—Mr. W. T. Burgess, Vice-President, and Dr. Fox have reported on behalf of a Sub-Committee of the Glass Research Committee, consisting of Messrs. Blount, Burgess, Fox, and Voelcker, deputed to inquire into the subject of laboratory porcelain, giving details of tests recommended by them for the examination of such ware. The range of experiments covered pre-war samples of Royal Berlin and of Haldenwanger's ware, which were compared with samples from Japan, Denmark, France (Bayeux, Frusier, Limoges), and from several British firms. Dr. Fox has also reported on combustion boats, Gooch crucibles, and porcelain tubes.

An abstract of the report will be published with the report on the tests for laboratory glassware.

The Title "Chemist."—At the meeting of the Council of the Institute held on July 20th the Registrar was directed to take steps to arrange a conference between representatives of the Institute and of the Pharmaceutical Society to discuss the title "chemist."

A meeting was held at the Institute on October 17th, Sir James Dobbie, President, in the Chair. Dr. Arthur Harden, Vice-President, Dr. Robert Robertson, member of Council, and the Registrar attended at the request of the President. Mr. Edmund White, President, Mr. Nethercoat, Vice-President, and Mr. Chater, Assistant Secretary, attended as representatives of the Pharmaceutical Society.

The President referred to the proceedings of the Council Meeting held in July, and to the views expressed by various members of the Institute. He also read a statement on the subject prepared by Dr. M. O. Forster, Vice-President.

A general discussion followed on the interpretation of the Pharmacy Acts, 1868 and 1908, and the President indicated that it was felt by a very large number of chemists, other than those practising pharmacy, that they were at a great disadvantage in having no title to distinguish them from pharmacists. The meeting was held to consider whether there was any possibility of the Pharmaceutical Society being able to assist the Institute to remedy this state of affairs. The matter was being pressed particularly at the present time, when the services of chemists whom the Institute represented were so much in demand, and when greater attention was being given to the applications of chemical science in industry.

Mr. White said that, if the Council of the Society had the power to help the Institute in the matter without in any way injuring their own members, he felt sure that they would do what they could, but there were a few points which chemists other than pharmaceutical chemists had probably not taken into consideration in connection with it:—

(2). Although the Act of 1908 had reserved to the properly qualified pharmaceutical chemist the title "pharmacist," the Society had found that they were unable to restrict the use of the word "pharmacy."

^{(1).} The Pharmacy Act of 1908 had given to trading companies the right to use the word "chemist," provided that a qualified pharmaceutical chemist or chemist and druggist was in charge of the business.

^{(3).} The Society had never interfered with the use of the title "chemist" by analytical, consulting, and technological chemists, provided they did not keep open shop for the sale or dispensing of poisons or practice as chemists and druggists.

^(4.) Supposing that the Society were in a position to induce their Members to relinquish the use of the word "chemist," it would be reasonable for them to ask that they should not suffer any detriment by doing so. There was at present no sort of guarantee that powers could be secured to prevent its adoption by all herbalists and drug-store keepers and the chemists referred to in (1), over whom the Society had no control, as well as by the chemists represented by the Institute. There were about

9,500 pharmacists' shops in the country, and probably 1,500 of them were under the control of powerful trading companies, who would strongly object to any interference with their rights; but supposing the word "chemist" were to be eliminated from all pharmaceutical and druggists' shops, the cost of altering facias, labels, bottles, stationery, etc., etc., would probably represent a quarter of a million pounds. Could the Institute or any body provide the necessary funds to effect the alterations?

(5). The protection granted to the "chemist" under the Pharmacy Acts only extended to the selling and dispensing of certain poisons, and free trade existed in drugs and chemicals outside the substances in the poison schedule. The protection, such as it was, was only granted with a view to safeguarding the public from criminal or negligent use of poisons.

Mr. White believed that very many pharmaceutical chemists would prefer to use the word "pharmacist," and the Society, in its publications and otherwise, had rather encouraged such use. He undertook to raise the matter again with the Council of the Society, possibly with a view to preparing a statement of their views, which could be used for the information of all persons interested.

The President said that some of the points which Mr. White had raised were new to him and would probably be so to many other chemists. He thanked Mr. White and his colleagues for coming to the Institute to discuss the matter.

The Regulations.—In Part III. of the Proceedings, published in August last, attention was directed to the revised Regulations for the admission of Students, Associates, and Fellows of the Institute. The special provision made for the cases of chemists engaged with the Forces or on other work of national importance has resulted in the Council receiving a large number of applications for the Associateship, all of which have been subjected to the careful scrutiny of the Nominations and Examinations Committee. The roll of the Institute is likely to be extended considerably by the addition of many chemists who have proved their eligibility for election and this accession to the Institute will strengthen it as the representative body of British Chemists.

The Council learn, however, that some misapprehension has arisen among certain Fellows and Associates lest the prestige of the Institute be endangered by this provision.

At the present time it is practically impossible for many qualified candidates to prepare for examinations, owing to the services which they are rendering to the country. The Council feel that such candidates should not suffer hardship on that account, but should rather be invited now to become associated with the Institute both for the public good and for the furtherance of the interests of the profession. The conditions printed on the form of application, framed in accordance with the opinion of the legal advisers to the Institute, have been complied with in every case which has been accepted, and no election has taken place except on the unanimous vote of well-attended meetings. The measure is a temporary one and there is no intention of relaxing the requirements for membership when normal conditions are restored. The Council fully realise the necessity of maintaining the high standard of these requirements.

Nearly all of the new Associates have obtained Degrees (the majority with honours) or other recognised diplomas, or passed the Intermediate Examination of the Institute. In other cases, the Council have been satisfied that the candidates have been properly trained and have attained a standard equivalent to that of the Degree of B.Sc. with honours. Practically all of those who have been engaged in chemical work of national importance have acquired useful technical or research experience and have produced highly satisfactory testimony from their authorities. Some have made inventions of direct value to the country in the prosecution of the war.

It may be remarked that of those engaged with the forces—representing one-third of the number elected—not a few have distinguished themselves on active service.

The Further Organisation of the Profession of Chemistry.—A Provisional Committee, with headquarters in Manchester, recently convened a meeting to consider the formation of a British Association of Chemists, which should consist, according to the notice issued, of persons holding any

University degree (or the equivalent) with chemistry as principal subject, or who could produce evidence of having received a satisfactory general education and of having practised pure and applied chemistry in a responsible position for not less than five years.

It was proposed that the objects of the Association should be to obtain power to act as a registration authority for all chemists; to have the word "chemist" legally re-defined; to safeguard the public by obtaining legislation ensuring that certain prescribed chemical operations should be under the direct control of chemists; to raise the status of chemists and to make the profession worthy of the attention of the best intellects, in order to secure a supply of highly-trained chemists adequate to the industrial needs of the Empire; to secure incorporation under the Companies Act, and finally to petition for a Royal Charter.

The Provisional Committee intimated that all chemists, whether employers or employees, were invited to attend the meeting. A letter from the Chairman of the Committee, Dr. R. B. Forster, was subsequently published in the Chemical Trade Journal and Chemical Engineer, stating that if the Institute would obtain powers to legalise the use of the title "chemist," become sole registration authority for all chemists, and act generally both in the interests of the profession and the public, then the necessity for the formation of a new Association would not exist; further, that the Committee hoped that the Institute would co-operate in the movement.

The Council of the Institute, therefore, feeling that the aims of the Association largely coincided with those of the Institute, issued a circular letter stating that they would deprecate the formation of other bodies of chemists, as tending to weaken rather than strengthen the position of the profession. They expressed their sympathy generally with the aims of the Provisional Committee and, in order to facilitate the consideration of the matters involved, authorised the publication of a statement on the objects and policy of the Institute.

This statement reviewed the early history of the Institute, indicated the aims of the founders and the purposes for which it was incorporated by Royal Charter, and included a short summary of the Regulations for admission to the Membership, with a brief reference to the results achieved and the steps taken towards the more complete organisation of the profession of chemistry. Reference was also made to the use of the word "chemist" (see p. 4).

In view of the urgency of the matter, the issue of a general notice to the Members and Students was found to be practically impossible under prevailing circumstances, but copies of the circular letter and statement were forwarded to Fellows and Associates within easy distance of Manchester and to works where large numbers of chemists are engaged. The statement was also published in the *Chemical News* and, in part, in the *Chemical Trade Journal and Chemical Engineer*.

An informal conference between the Provisional Committee (Manchester), the Provisional Committee (Birmingham), and representatives of the Institute was held immediately prior to the Manchester meeting in order to provide an opportunity for the preliminary discussion of the proposals to be submitted to the meeting, which was subsequently attended by a number of Members of the Council—Prof. Alexander Findlay (Aberystwyth), Mr. E. M. Hawkins (Canterbury), Mr. H. G. Lacell (London), Prof. G. T. Morgan (London), Mr. W. H. Roberts (Liverpool), Mr. Thomas Tickle (Exeter), Mr. L. E. Vlies (Manchester), and Mr. Edmund White (London). The Registrar was also present in order to report upon the proceedings to the Council.

Dr. Alfred Rée, who presided, explained that the Committee had selected him as Chairman of the meeting for the reason that they desired one who, although a chemist, was neither a manufacturer nor a chemist engaged in industry, nor a teacher, nor a member of the Institute, and could therefore view the position with impartiality. He was very desirous of being associated with any movement which would further the interests of chemists. The organisers of the meeting hoped

to make their profession more popular and more highly appreciated in every sense. He referred to the use of the word "chemist," deploring the circumstance that in this country it was commonly accepted in the restricted sense of the Pharmacy Acts. He had been much impressed by evidence of the many useful purposes accomplished by the Institute, but quite as much or more by the possibilities for future good which the Institute might be able to accomplish on behalf of the profession if the Council would adopt all or most of the objects of the proposed Association. He disliked the idea of forming further societies and advocated rather a policy of concentration. The Council of the Institute were holding out a friendly hand; he believed that they would welcome assistance in strengthening the foundations, in making further additions as well as in putting some important finishing touches to their edifice in the direction of promoting peace and goodwill among chemists. The next twenty-five years would witness an enormous development in the application of chemistry to all industries, including the greatest and most important of all-agriculture-and they might, he thought, accept without reservation the dictum of the late Sir William Ramsay, that in the years to come the country which was in advance in chemistry would almost inevitably attain to the foremost position in general prosperity and the well being of its people.

Dr. R. B. Forster, Chairman of the Manchester District Provisional Committee, having traced the course of events which had led up to the meeting, thanked the Provisional Committee of Birmingham for their co-operation, the chemists who had written expressing sympathy with the movement, the Press (particularly the Chemical Trade Journal and Chemical Engineer) for the publication of articles, notices and correspondence on the matter, and the Members of Council of the Institute who attended the meeting. In connection with the war the Government had been forced to recognise the need for chemists other than pharmacists, and had been obliged to appeal for men who had studied and practised

chemistry. It was not an easy matter to define a chemist. Those who had secured their training in a University—where every facility was afforded for learning the profession—would realise the difficulties of the man who was apprenticed to a chemical works and who, in spite of all the disadvantages and difficulties which beset his path, had by sheer hard work and merit obtained a considerable knowledge of the science, and in addition had attained a responsible position in the industry. Those men, he thought they would agree, were worthy of the best attention; special provision had been made, therefore, to ensure their admission to membership of the Association.

As the Universities, and certain institutions of University standard, were the only places where an individual could get a thorough training in chemistry, it would be unwise at the formation of an Association like that to discriminate between them, or, rather, their graduates. Although the newly-created graduate might not be acquainted with the details of manufacturing processes, or with the methods of the technical laboratory, he usually had a good grasp of the principles of the science, and was a potential chemist. It should not be understood, however, that they considered the present standard required for the B.Sc. degree as satisfactory for the future. That course might be easily broadened by requiring the candidate to spend at least a year in the works or in the practice of the science before the degree was conferred.

The public do not understand what a chemist is. Unless the profession could be raised to its proper position it would fail to attract the best intellects, and those who were already

chemists would seek promotion in other fields.

Mr. E. W. Smith, M.Sc., F.I.C., Chairman of the Provisional Executive Committee for the Birmingham district, said that the meeting proved that the demand existed for a body which should be the sole registration authority for chemists. His colleagues felt that a great deal must be sacrificed to unity, and that, accordingly, they should in the first place endeavour to induce the Institute of Chemistry to take them over; only as a last resort should a separate body be formed. They felt

strongly that it was just as important to include in the membership of the proposed Association the non-academically qualified chemists as those who were academically qualified. He wanted the Institute of Chemistry to recognise the importance of including works chemists of, say, seven years' experience, and who were now in positions of responsibility. The word "responsibility" would have to be defined. The qualifications proposed were an absolute minimum. He strongly urged that they should go straight ahead with all the energy in their power to the formation of the Association, leaving themselves open to be swallowed up by the Institute if the Institute would swallow them. The preparations for the formation of an independent body must be proceeded with immediately, in order that they should be prepared in the event of the Institute of Chemistry not meeting them as was desired. They hoped that the Institute would modify its constitution in order to include all chemists who were qualified by their training to be called chemists. They hoped also that the Institute would be the sole registration authority. So far, it had appeared to be chiefly an examining body which acted for the élite of the chemical profession.

Mr. Smith also expressed the hope that the Institute would have local sections in the same way as the Society of Chemical Industry

Mr. Edmund White, Member of the Council of the Institute of Chemistry and President of the Pharmaceutical Society, said that a few members of Council had come to the meeting charged with a message of sympathy. They were deputed to give the promoters of the meeting every hope and encouragement. The Institute had from its earliest days endeavoured to set a very high standard for its members. The Council recognised that the position had changed very considerably with the war, and he had no doubt that the Institute would do everything possible to incorporate the two bodies. It was quite likely that the suggestion that the Institute of Chemistry should have local sections would be adopted. He could see no difficulty in that direction.

Dealing with the controversy centering upon the use of the word "chemist." Mr. White said that he would deal with the question frankly and impartially. It was quite possible that if the parties concerned discussed the matter in the proper spirit it might be settled satisfactorily to all. The title was restricted to certain classes of men for the protection of the public. They had been sufficiently broadminded, however, to recognise that they could not monopolise the title. There was no reason why works chemists should not call themselves chemists. They were not prevented from doing that now, but if they were going to attempt to prohibit the use of the title by others, legislation would be necessary, and he did not think that would ever be obtained. The question must be approached very carefully. The Council of the Institute of Chemistry would be prepared to meet the Provisional Committees of the Association in conference in order to consider their proposals.

Prof. Findlay, Prof. Morgan, Mr. William Macnab and Mr. E. M. Hawkins, who also addressed the meeting on behalf of the Institute, agreed that the Council would be glad to meet the representatives of the Association and to discuss fully the questions at issue. The hope was expressed that, in the interests of the profession generally, everything possible

should be done to preserve a united front.

The following Resolutions* were passed:

I. That it is desirable to form a British Association of Chemists, and that a Provisional Society be formed according to the terms specified on the form of application distributed at the meeting, membership of such Society to be confined to persons whose qualifications conform to the standard set forth on the form announcing this meeting.

II. That the objects of the Association be as follows:—

(a) To obtain power to act as sole registration authority for all chemists.

- (b) To have the word "Chemist" legally re-defined.(c) To safeguard the public by obtaining legislation ensuring that certain prescribed chemical operations be under the direct control
- (d) To raise the profession of the chemist to its proper position among
 - * As reported to the Institute since the Meeting.

the other learned professions, so that it may attract the attention of a larger proportion of the best intellects and thereby secure a supply of highly trained chemists adequate to the industrial needs of the country.

III. That before incorporating this Association a Provisional Committee

be appointed by this meeting:-

(a) To approach the Council of the Institute of Chemistry in order to explain the objects of this Association and to express the opinion of this meeting that these objects can best be attained by the Institute of Chemistry broadening its scope.

(b) To draw up a draft constitution.

- (e) To obtain legal advice, requisite for drafting the Memorandum of Association for incorporation under the Companies Acts.
- (d) To draw up a list of approved degrees and diplomas for interpreting clause I. (a) (of qualification for membership).
- (e) To draft a form of application for membership (of the Association) and to receive applications.
- (f) To arrange that the next general meeting be held within fourteen days of January 31st, 1918, to receive this Committee's report.
- IV. That Provisional Committees of twelve members be formed in both the Manchester and Birmingham districts, and that these themselves shall form a National Provisional Committee to act until either the Association is incorporated or the Institute of Chemistry takes the Association over. Three representatives of each Committee shall form an executive acting for the members; this executive shall allocate the work of inauguration to the Birmingham and Manchester Committees.
- V. That the Manchester and Birmingham Committees be authorised to proceed with the business referred to in Resolution III.
- Mr. F. W. Atack, F.I.C., speaking on the Birmingham amendment, said it had yet to be shown that the formation of a new permanent Association would attain the desired objects in a more satisfactory manner than the Institute of Chemistry itself, provided that the Council of the Institute adequately represented all the varied interests in the different branches of chemistry. The resolution was therefore amended. in order to invite the co-operation of the Institute, which he was convinced, from the speeches made by members of the Council present, would be readily accorded. A live policy was required, and he felt that the Institute would be illadvised to reject the support of the members of the new Association. It was conceivable that, after full consideration, the representative Committee to be elected would decide that the Institute was carrying out, or was prepared to carry out, all the objects of the new Association as far as they were attainable. On the other hand, it was possible that the

constitution of the Institute would make it impossible for it to fulfil adequately the attainable objects of the Association. For that reason the amendment was worded in such a manner that, although it invited the co-operation of the Institute, it left the Committee free to recommend that the continued existence of the new Association was desirable.

It was decided that Provisional Committees of twelve should be appointed in both the Birmingham and Midland districts, and that these should form together a National Provisional Committee, to act until either the Association had been formed or the Institute of Chemistry took the Association over. Three representatives of each Committee should form an Executive acting for the members. This Executive should allocate the work of inauguration to the Birmingham and Manchester Committees.

Dr. Rée was appointed chairman of the Executive Committee.

(The above report of the meeting is largely abstracted from an account of the proceedings published in *The Chemical Trade Journal*, November 17th, 1917.)

A meeting of chemists of Liverpool and district was held at Liverpool on December 8th, Professor E. C. C. Baly in the chair. A resolution approving broadly of the aims of the proposed British Association of Chemists was agreed to, and a Committee was chosen to elect three representatives to confer with those from Birmingham and Manchester, and subsequently to meet the Council of the Institute.

The Council have now under consideration certain proposals submitted to them on December 14th by an Executive Committee consisting of representatives from the districts mentioned.

General Purposes Committee.—The Council have appointed a Committee, to be known as the General Purposes Committee, to consider the future development of the work of the Institute, including proposals advanced at the Manchester meeting.

Professional Interests.—In view of the possibility of the appointment of a Ministry of Public Health, a joint Committee of the Councils of the Institute and the Society of Public Analysts has under consideration the position of professional chemists in that connection, having special regard to the administration of the Sale of Food and Drugs Acts, the Fertilisers and Feeding Stuffs Acts, and other statutes necessitating the services of competent analysts and chemical advisers. The proceedings of the Committee will be reported in due course.

The Ministry of Munitions having decided that all supplies of phosphate fertilisers should be reported upon by one firm of consulting chemists, a protest was made by a number of agricultural chemists, and the proposal was abandoned.

The Council having been informed of the intention of a rural district council to appoint a sanitary inspector who should also undertake analyses, a letter was addressed to the local authority urging the importance of selecting a properly qualified analyst for the work, especially in the case of samples which may have a bearing on the public health.

Professional Chemists and the War.—The position of chemists under the List of Certified Occupations remains the same as stated in Part III. of the Proceedings.

A number of Commissions in the Navy and Army and Air Services are still open to chemists, and men liable to military service are therefore invited to make inquiries at the Institute.

The demand for the services of chemists, not only in the production of munitions of war, but in industry generally, continues to increase, and considerable difficulty is now experienced in obtaining properly qualified candidates for many of the vacancies brought to the notice of the Institute.

The Council have pleasure in recording that the honour of knighthood of the Order of the British Empire has been conferred on Prof. Herbert Jackson, Vice-President, and the honour of Companion of the same Order on Mr. Frank William Harbord and Prof. Jocelyn Field Thorpe.

Death of Mr. George T. Holloway. — The Council record with deep regret the death of Mr. George Thomas Holloway, Member of Council.

Examination.—The Council have received a report on the examination of one Candidate in the Final Examination in Metallurgical Chemistry, conducted in Glasgow in July under the superintendence of Dr. C. H. Desch and Prof. G. G. Henderson. The Candidate passed and has been duly elected to the Associateship:—

Hall, Horace Campbell, M.Met. (Shef.).

The Building Fund.—In view of the continuance of the war, no special effort has been made so far during the present year to clear off the debt on the Building Fund. It has been felt that, under prevailing circumstances, many other appeals held a prior claim, but as the amount required is only about £2,500, it is hoped that the united efforts of the Fellows and Associates will soon enable the Finance Committee to close the Account. There is still an opportunity for Fellows and Associates who have not yet subscribed to forward donations, and any help will be greatly appreciated. At present the General Account of the Institute is losing the benefit of income which would be derived from a sum of £1,750 loaned to the Building Fund, and the latter is paying the interest on a loan of £1,000 from the Bankers of the Institute.

Scientific and Industrial Research.

The second Report of the Committee of the Privy Council for Scientific and Industrial Research for the year 1916-1017, which was published in August last, with the Report of the Advisory Council, announced the formation of the Department of Scientific and Industrial Research, and the creation of the Imperial Trust, which will hold on behalf of the Department the sum of one million sterling, voted by Parliament for the purposes of the latter. Negotiations of the Advisory Council with the leading manufacturers in various industries have shown that it would not be possible to develop systematic research on a large scale unless the Government were in the position to assist financially over an agreed period of years. The industries might be expected to bear a considerable share of the large sums involved; but it would be difficult to foresee from year to year the amount of expenditure likely to be called for and the industries would look for an assurance that, as the need arose, the Department would be in a position to give the necessary aid. larger and more prosperous industries might be expected, after an initial impetus, to continue the work without direct assistance from the State. These considerations convinced the Covernment that the expedient of placing a fund at the disposal of the Committee to be spent over a period of five or six years afforded the best means of dealing with the problem. The Advisory Council have recommended that the money thus made available should be spent in the form of grants in aid of research undertaken by firms in any industry which may combine to conduct it on a cooperative basis. The Council advise that the best means to this end is the establishment under the Companies Acts of Associations for Research, limited by guarantee and trading without profit. They have approved this method of procedure, which has the additional advantage that the Board of Inland

Revenue have decided that no objection shall be offered by their Surveyor of Taxes to the admission, as a working expense for income tax allowance, of contributions by traders to industrial associations under Government supervision, formed for the sole purpose of scientific research for the benefit of the various trades, or the Research Section of an adapted existing association.

The Committee have concluded negotiations with the Royal Society for the transfer of the property of the National Physical Laboratory, together with the responsibility for its maintenance and development, to the new Department. The scientific management of the Laboratory will remain in the hands of the Executive Committee, under the chairmanship of Lord Rayleigh, which will be appointed as heretofore but will become a Committee of the Department, and will report to the Committee of the Privy Council through the Advisory Council.

In order to deal with the urgent problem of fuel economy, a Fuel Research Board has been appointed, with Sir George Beilby as Director. The Board has recently appointed an Irish Committee under the chairmanship of Sir John Griffith to inquire into peat as a source of power.

Special reference is made to a grant of £1,000 a year for five years, together with a grant of £750 for special apparatus, to the Department of Technical Optics, recently established at the Imperial College of Science and Technology. The College is providing laboratory accommodation and an equipment grant of £2,000. The grant from the Committee will be devoted entirely to research purposes, but the new Department is also receiving generous support for both its research and educational work from the Board of Education, the London County Council and the optical industry.

The Committee have also considered and approved recommendations in respect of aid to forty-four scientific investigations of industrial importance. Nine of these had already received aid during the financial year 1915—1916; the remaining thirty-five were new proposals.

Fuel Research. - The Fuel Research Board has presented a report on a scheme of research and on the establishment of a Fuel Research Station.

In the first report of the Board, which was not published, two main lines for research were proposed: (1) A survey and classification of the coal seams in the various mining districts by means of chemical and physical tests in the laboratory, and (2) an investigation of the practical problems which must be solved if any large proportion of the raw coal at present burned in its natural state is to be replaced by the various forms of fuel obtainable from coal by processes of carbonisation and gasification.

In preparation for the first line of research an experimental study of standard methods for the examination of coal in the laboratory has been made, and as the result of work carried out for the Board in the Fuel Laboratory of the Imperial College of Science and Technology, a test has been elaborated which, by direct weighing and measurement, gives the yields of gas, oil, water, and carbonaceous residue resulting from carbonisation at any definite temperature.

With regard to the collection and registration of samples from different coal-mining districts, the representatives of the coal owners have shown every disposition to co-operate, but it is not proposed to start any extensive organisation for this purpose until the preparations for the second inquiry are further advanced, since the accumulation of large numbers of samples would serve no useful purpose at present and would be inconvenient.

As regards the second line of research, a really comprehensive scheme cannot be formulated until certain definite problems in the low temperature distillation of coal have been solved.

The solution of these fundamental problems will supply a new base from which to attack such questions as the following:—

^{1.} Can the 35 to 40 million tons of raw coal used every year for domestic

heating be replaced wholly or partially by smokeless fuel, solid or gaseous, prepared by the carbonisation of this coal?

2. Can adequate supplies of fuel oil for the Navy be obtained by carbonising the coal at present used in its raw form for industrial and domestic purposes?

3. Can supplies of town gas be obtained more economically and efficiently by methods of carbonisation and gasification other than those now used in gaswerks.

. 4. Can electric power be obtained more cheaply if the coal used for steam raising is first subjected to processes of carbonisation and gasification?

5. Will the more scientific development of the preparation and use of fuel, which would be implied in the successful working out of the foregoing questions, enable the peat deposits of the United Kingdom to take a serious place as economic sources of fuel for industrial purposes?

6. Can the use of gaseous fuel in industrial operations be forwarded by the development of more scientific methods of combustion in the furnaces, muffles, and ovens used in metallurgical, ceramic, and chemical operations?

The answers to these questions, the report points out, will be obtained only by co-ordinated research carried out on the lines of a broad and well-considered scheme. The Fuel Research Board anticipate that solutions of some of the problems may be supplied by serious workers in the industries. They would regard it as a great misfortune if the establishment of a Government organisation for fuel research were to result in discouraging or in any way limiting the activities of outside workers or organisations.

The Board being in touch with the Admiralty, the Ministry of Munitions, the Board of Trade and other public departments, is exceptionally well placed for the furtherance of schemes which involve the finding of large outlets for products. The requirement of the Admiralty alone would absorb all the oil which could be produced by the carbonisation of tens of millions of tons per annum, but while this will undoubtedly help on the economic side of the problem it in no way relieves the pressure on the technical side. In a way it accentuates the problem of the profitable disposal of the coke or carbonaceous residue which is left when the volatile products have been distilled from the coal.

The disposal of coke or char at a profitable price must be regarded as the vital question if low-temperature carbonisation is to be established on a sound economic basis. The

research scheme must therefore include a very complete inquiry on (I) the use and value of the coke for the direct firing of steam boilers; (2) its gasification in producers for the manufacture of low-grade fuel gas and the recovery of its nitrogen as ammonia, and (3) its use for industrial and domestic heating, either directly as it comes from the retorts or after conversion into briquettes. The second inquiry will involve the development of a special form of gas producer and auxiliary plant if the best results are to be obtained from the coke, and of a system of boiler firing in which fuel gas of 130 B.T.U. can be burned at least as efficiently as coal.

The scheme of research can only be efficiently carried out in a Fuel Research Station designed and equipped for the purpose, in which operations can be conducted on an industrial scale under proper working conditions.

These conditions could be fulfilled only by a site in the neighbourhood of a large gasworks, and the Director of Fuel Research therefore approached Dr. Charles Carpenter, the Chairman of the South Metropolitan Gas Company, in the matter. The Board of the Company subsequently made the following offer:-

2. To prepare drawings and specifications for the station on lines laid down by the Board and to make contracts for its erection; and

The Station, as planned, will be capable of extensions required for future researches. Of the four acres to be leased, only one acre will be occupied by buildings under the present scheme. A large part of the equipment of the buildings will be of a permanent character and will serve all the general purposes of a Research Station. Future extensions will not repeat this permanent equipment, but will be based upon it.

^{1.} To lease to the Government at a peppercorn rent sufficient land at the East Greenwich Gasworks for the erection of the research station;

^{3.} To give every facility for the transport of coal and other supplies to the station and to take ever, at market prices, the surplus products, gas, tar, liquor and coke resulting from the operations of the station.

Board of Scientific Societies.—In a report on the results of the first year's work of the Board of Scientific Societies, on which the Institute is represented by the President and Sir Herbert Jackson, mention is made of the proceedings of the Sub-Committees dealing with (1) The International Catalogue of Scientific Literature, (2) the Application of Science to Agriculture, (3) National Instruction in Technical Optics, (4) Education, (5) the Prevention of the Overlapping of Scientific Societies, (6) the Metric System, (7) Anthropological Survey, (8) Magnetic Surveys (Iron Ore), (9) Water Power of the British Empire, and (10) Timber for Aeroplane Construction.

With regard to (4) (Education), the Board has accepted the following resolutions :— $\,$

1. The first object in education is the training of human beings in mind and character as citizens of a free country, and any technical preparation of boys and girls for a particular profession, occupation, or work must be consistent with this principle.

2. In all schools in which education is normally continued up to or beyond the age of sixteen, and in other schools, so far as circumstances permit, the curriculum up to about the age of sixteen should be general and not specialised.

3. In the opinion of this Conference, both natural science and literary subjects should be taught to all pupils below the age of sixteen.

4. In the case of students who stay at school beyond the age of sixteen, specialisation should be gradual and not complete.

5. In many schools of the older type more time is needed for instruction in natural science, and this time can often be obtained by economy in the time allotted to classics, with advantage to the best interests of education.

6. In many other schools more time is needed for instruction in languages, history, and geography, and it is essential, in the interests of sound education, that this time be provided.

7. While it is impossible and undesirable to provide instruction in both Latin and Greek in all secondary schools, provision should be made in every area for teaching in these subjects.

The following resolutions have been communicated by the Board to the Government Committee on Science in the Educational System of Great Britain:—

1. That, in the opinion of this Committee, it is important to train teachers to give inspiring and attractive courses in science, and, in order to secure such teachers, it is necessary that adequate salaries be paid

2. That, while prime importance must be attached to adequate provision for laboratory work, it is essential that there should be also instruction in the romance of scientific discovery and its applications. Every pupil should not only receive training in observational and experimental science, but should also be given a view of natural knowledge as a whole. The object should be to evike interest in science in relation to ordinary life, rather than to impart facts or data of science presented by an examination syllabus, or even to systematise their rediscovery.

The President and Sir Herbert Jackson have been reappointed representatives of the Institute for the year 1918.

The Nitrogen Problem. — The Comptroller of the Ministry of Munitions Inventions Department has published a memorandum on the nature and scope of the work of the Nitrogen Products Committee which has been conducting a confidential and exhaustive inquiry into the Nitrogen Problem, especially in its bearing upon war and peace demands for nitrogen compounds for munitions and agriculture. The progress made and the success attending the systematic research work which has been undertaken foreshadow the possibility of development of permanent value to the country. A number of sub-committees have been appointed to investigate processes, economics, experiments and power, and for general purposes, as well as to deal with coal distillation processes and the production and utilisation of power gas. Endeavours are being made to expedite the work in order that the Final Report may be available at the earliest possible date.

FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERV-ING OR WHO HAVE SERVED WITH H.M. FORCES.

(SUPPLEMENTARY LIST.)

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

FELLOWS.

Slade, R.E., Captain, R.E.

ASSOCIATES.

Acland, T. W. G., Lieut., R.E.

Boorman, H. G. T., Sub-Lieut., R.N.V.R.

Bowack, D. A., F.R.

Brazier, S. A., Lieut., R.N.V.R.

China, F. J. E., Lieut., R.A.M.C.

Christelow, J. W., Lieut., R.E.

Cooke, J. H., Captain, R.G.A.

Crowther, H. L., Lieut., R.N.V.R.

Elliott, J. C., Lieut. R.E. (M.C.)

Gray, G., Staff-Lieut. (mentioned in despatches).

Hackney, N., Middlesex Regiment.

Hampson, R. E. V., Lieut., R.E.

Higson, G. I., R.E.

Hothersall, W. C., Royal Fusiliers.

Hudleston, L. G., Captain (M.C.)

Jenkin, C. O. F., 2nd Lieut., Suffolk Regiment.

Joyner, R. A., Captain, R.S.F.

Lane, K. W., 2nd Lieut., R.F.A.

Monteith, W., R.E.

Napier, O. J. W., Lieut. (Air Board).

Parker, L. H., Lieut., R.E.

Perry, G. A., Hon. Lieut.

Rait, P. W., Lieut., R.F.A.

Rawling, S. O., Cadet, R.G.A.

Rudge, E. A., Royal West Surrey Regiment.

Sellars, E. L., Captain, R. E. (M.C.)

Sheldon, W., Royal Fusiliers.

Shipston, Lieut. G. T., Instructor, Officers' Cadet Battalion.

Slater, Leonard, Lieut., R.E.

Sugden, Samuel, R.E.

Williams, E. C., Captain, East Yorkshire Regiment.

STUDENTS.

Clifford, P. H., Sub-Lieut., R.N.V.R.

Corby, F. J., Cadet, R.E.

Day, F., 2nd Lieut., R.G.A.

Fletcher, D. N., Pioneer, R.E.

Goodall, G. F., Infantry Battalion.

Laxton, F. C., Sub-Lieut.

Marks, H. P., Seaman, R.N.

Smith, C. M., Lieut., R.A.M.C.

Stewart, G. S., 2nd Lieut., R.F.C.

Since the publication of the List given in Proceedings, Part IV., entries have been altered in the following cases:—

FELLOWS.

Bridge, S. W., Captain, Chemical Adviser.

Collett, R. L., Captain, R.A.M.C.

Eaton, B. J., Lieut., O.C. Malayan Volunteer Infantry.

Golding, J., Captain, R.A.M.C. (T.), (D.S.O. Twice mentioned in Despatches).

Stubbs, J. R., Captain, A.O.D.

ASSOCIATES.

Bagshaw, W. N., Lieut., York and Lancaster Regiment.

Bray, G. T., 2nd Lieut., Inland Water Transport.

Bruckman, R. T., Captain, Border Regiment.

Bull, P. C., Major, Suffolk Regiment (D.S.O. Mentioned in Despatches).

Christie, J. H., 2nd Lieut., Inland Water Transport.

Clark, Robert, Squadron Sergeant-Major, Lothian and Border Horse.

Himus, G. W., Sergeant, R.E.

Jones, G. J., Lieut., South Wales Borderers.

Kent-Jones, D. W., Lieut., R.F.C. (mentioned in despatches).

King, John, Captain, Lincolnshire Regiment (mentioned in despatches).

Lea, H. T., Staff-Lieut., Chemical Adviser.

McCall, R., Corporal, R.E.

Moore, G. W., Cadet, R.G.A.

Northover, Roland, Captain, Lancashire Fusiliers.

Pattison, J. W. H., Major, Scottish Rifles (T.F.).

Sugden, J. N., Lieut., R.E.

Watt, J. J., 2nd Lieut., Inland Water Transport.

Webb, H. M., Captain, R.E.

Webb, H. W., 2nd Lieut., Royal Warwickshire Regiment.

Wynn, W. O. R., Officers' Cadet Battalion.

STUDENTS.

Beesley, R. M., Lieut., R.E. (M.C.).

Clark, L. N., Lieut., A.O.D.

Goodwin, S. W., 2nd Lieut., The Border Regiment.

Greaves, R., 2nd Lieut., R.G.A.

Hornby, A. J. W., Acting Captain, R.F.A.

Hunwicke, R. F., 2nd Lieut., A.S.C.

Murray, K. F. M., Captain, London Regiment.

Roberts, E. J., Assistant Paymaster, R.N.V.R.

Smith, J. S., 2nd Lieut., L.N. Lancashire Regiment.

Stearn, J. H., Lieut., Durham Light Infantry (D.S.O.; Croix de Guerre).

Stewart, R. F., 2nd Lieut., R.F.A.

Thompson, S. G., Captain, West Kent Yeomanry.

Whitham, R. P. N., Lieut., R.F.C. (M.C.).

The Register.

Since the publication of Proceedings, Part III., 1917, the Council have elected 25 new Fellows; II Associates have been elected to the Fellowship; 183 Associates have been elected, and 22 new Students have been admitted. The Institute has lost 5 Fellows, I Associate, and 4 Students by death.

New Fellows.

- Alexander, Thomas James Roland, B.A. (Oxon.), B.Sc. (Lond.), Viewfield, Eglinton Road, Ardrossan. [Research Chemist, Nobel's Explosives Co.]
- Anderson, Edward, I. White's Terrace, Waun Wen Road, Swansea. [Chief Chemist, Messrs. Williams Foster & Co., and Pascoe Grenfell & Sons.]
- Beckett, Ernest George, Dip. Chem., Ph.D. (Zurich), No. 1, Sandhills, Ardeer, Stevenston, Ayrshire. [Research Chemist, Nobel's Explosives Co.]
- Bell, Marcus, High Commissioner's Offices, Arsenal Branch, Australia House, Strand, London, W.C. 2. [Superintendent of Laboratories, Commonwealth Arsenal.]
- Calder, William Alexander Skeen, 449, Hagley Road, Edgbaston, Birmingham. [General Manager and Director, Messrs. Chance & Hunt, Ltd.]
- Cockburn, John Alexander, Ardeer Factory, Stevenston, Ayrshire. [Manager, Manufacturing Section, Nobel's Explosives Co.]
- Coward, Hubert Frank, D.Sc. (Manc.), 74, Primrose Mansions, London, S.W. 11. [Department of Scientific and Industrial Research.]
- Cumning, Alexander Charles, D.Sc. (Melbourne), 2, Relugas Road, Edinburgh. [Manager, Lothian Chemical Co., and Joint Manager, H.M. Factory.]
- Heathcote, Henry Leonard, M.Sc. (Birm.), Messrs. Rudge-Whitworth, Ltd., Coventry. [Chief Chemist, Messrs. Rudge-Whitworth, Ltd.]
- Hinchley, Prof. John William, A.R.C.S., 55, Redeliffe Road, London, S.W. 10. [Assistant Professor of Chemical Engineering, Imperial College of Science and Technology.]
- Jones, David Trevor, M.Sc. (Vict.), 44, Ardrossan Road, Saltcoats, Ayrshire. [Research Chemist, Nobel's Explosives Co.]
- Millington, John Price, M.A. (Cantab.), B.Sc. (Wales), 80, Cambridge Gardens, London, W. 10. [War Office].

- Moore, Harold, B.Sc. (Lond.), 71, Foyle Road, Blackheath, London, S.E. 3.
 [Assistant Superintendent, Mechanical Research, Woolwich Arsenal.]
- O'Farrelly, Alfons, M.A. (R.U.I.), 26, Highfield Road, Rathgar, Co. Dublin. [Lecturer in Organic Chemistry, Royal College of Science for Ireland.]
- Peachey, Stanley John, M.Sc.Tech. (Vict.), 5, Yew Tree Road, Davenport, near Stockport. [Assistant Lecturer, Faculty of Technology, University of Manchester.]
- Picton, Norman, B.Sc. (Wales), Ph.D. (Leipzig), 12, Sorbie Road, Saltcoats,
 Scotland. [Chemist in Charge, Research Department, Nobel's Explosives Co.]
- Roberts, Herbert Wallace, B.Sc. (Lond.), H.M. Factory, Queensferry, by Chester, [Chief Chemist.]
- Rotter, Godfrey, B.Sc. (Wales), Mountside, Upton Road, Bexley Heath, Kent. [Research Department, Woolwich Arsenal.]
- Simmons, William Herbert, B.Sc. (Lond.), 96, Victoria Street, Westminster, S.W. 1. [Consulting Chemist. Author of Works on Oils, Fats, and Waxes; Soap, etc.]
- Slade, Captain Roland Edgar, D.Sc. (Manc.), 16, Clevedon Mansions, Lissenden Gardens, London, N.W. 5. [Lecturer in Physical Chemistry, University College, London.]
- Spackman, Charles, Rosehaugh, Clitheroe, Lancashire. [Manager and Technical Director, Irish Portland Cement Co.]
- Sprent, William Colin. Dr. Ing., Dpl. Ing. (Dresden), Auldmuir, Argyle Road, Saltcoats, Scotland. [Research Chemist, Nobel's Explosives Co.]
- Thomas, John, B.A. (Cantab.). D.Sc. (Wales), Belmont, Sorbie Road, Ardrossan, Scotland. [Research Chemist, Nobel's Explosives Co.]
- Walker, Andrew Jamieson, B.A. (R.U.I.), Ph.D. (Heidelberg), Upton Lodge, Shakespeare Road, Harpenden, Herts. [Late Head of Chemistry Department, Technical College, Derby.]
- Wood, William Francis John, B.Sc. (Lond.), Ardsley House, Near Barnsley, Yorks. [Managing Director, Messrs. Wood Bros. Glass Co.]

Associates Elected to the Fellowship.

- Anderson, Edward Bertram, M.Sc. (Birm.), c/o A. Scott, Esq., Powder Mill Lane, Waltham Abbey, Essex.
- Brown, Harold Bush, H.M. Factory, Queen's Ferry, Flint.
- Collins, Cecil George, 67, Wickham Road, Brockley, London, S.E. 4.
- Durrans, Thomas Harold, B.Sc. (Lond.), 245, Woodstock Road, Oxford.
- Frazer, 2nd Lieut. Donald Richard, The Hague, Dumbreck, Glasgow.
- Groenewoud, Sidney Henry, 12, Alexandra Road, Edgbaston, Birmingham,
- Keith, Robert Philip, Forthbank, Lenzie, Scotland.
- Lambourne, Lieut. Herbert, B.Sc. (Lond.), 32, Mansfield Road, Croydon, Surrey.

- Norris, Lieut, William Henry Hobbs, B.A. (Cantab.), B.Sc. (Lond.), H.M. Factory, Langwith, near Mansfield.
- Peacock, David Henry, B.A. (Cantab.), B.Sc. (Lond.), 25, Forrest Avenue, Marsh, Huddersfield.
- Stanhill, David Bernard, B.Sc. (Lond.), 10, Halliwell Lane, Cheetham Hill, Manchester.

New Associates.

By Examination.

Hall, Horace Campbell, 57, Wilfred Street, Derby.

Elected under the special provisions of the Regulations adopted by the Council, July, 1917.

S. = Naval, Military, or Air Service. M. = Munitions.

I.I. = Passed the Intermediate Examination of the Institute.

Acland. Lieut. Theodore William Gull, B.A. (Cantab.), 19, Bryanston Square, London, W. 1. [S.; M.]

Adams, Charles Ambrose, B.Sc. (Lond.), 10, Christchurch Place, Christchurch Road, London, N.W. 3. [I.I.; M.]

Adye, John William, B.Sc. (Bris.), B4, Staff Quarters, Eastriggs, Dum-friesshire, Scotland. [M.]

Anderson, Lennox James, The Barking Chemicals, Ltd., Creeksmouth Road, Barking. [Finsbury Tech. Coll. Certif.; M.]

Ashmore, Stanley Arthur, B.Sc. (Lond.), 57, St. Aidan's Road, East Dulwich, S.E. 22. [M.]

Bagnall, Howard Henry, B.Sc. (Birm.), Ellesmere, 21, Crosbie Road, Harborne, Birmingham. [M.]

Bagshaw, Lieut. Walter Noël, B.Sc. (Lond.), Moorfield, Birkenshaw, near Bradford. [Govt. Lab.; S.]

Baillie, William Learmouth, B.Sc. (Edin.), 20, Dallin Road, Shooters Hill, London, S.E. 18. [M.]

Bainbridge, Ernest Graham, M.Sc. (Manc.), 80, Deodar Road, Putney, London, S.W. 15. [M. and Admiralty.]

Bishop, Lieut. Robert Odell, Asham House, Rye, Sussex; and H.M. Factory, Litherland, Liverpool. [Finsbury Tech. Coll. Certif.; I.I.; S.; M.]

Black, James Walter, B.Sc. (Lond.), 32, Old Queen Street, Westminster, London, S.W. 1; and 36, Cloudesdale Road, Balham, London, S.W. 17. [M.]

Blake-Wride, Douglas Herbert, B.Sc. (Lond.), The Ferns, 4, Wynell Road, Forest Hill, London, S.E. 23. [M.]

Booman, Sub-Lieut. Harry George Trench, R.X.V.R., 19, Court Street, Faversham; and H.M.S. Hermione, Southampton. [I.I.; M.; S.]

- Bowack, Douglas Anderson, 15, Belsize Square, Hampstead, London, N.W. 3. [Finsbury Tech. Coll. Certi.; S; M.]
- Bowden, Richard Charles, M.Sc. (Bris.), 2, Totteridge Road, Enfield Wash, Middlesex; and Royal Gunpowder Factory, Waltham Abbey, Essex. [M.]
- Branson, Frederick Hartridge, Myrtle Cottage, Talbot Grove, Roundhay, Leeds. [Previously accepted as a Candidate for Final Exam. War Work.]
- Bray, 2nd Lieut. Geoffrey Trelawney, 3, Milton Road, Highgate, London, N. 6. [Finsbury Tech Coll. Certif.; I.I.; S.]
- Brazier, Lieut. Sidney Albert, R.N.V.R., M.Sc. (Birm.), 2, Mansfield Villas, Yardley Wood Road, Moseley, Birmingham. [S.]
- Bruckman, Captain Richard Theodore, B.Sc. (Lond.), 70, Woodside Park Road, North Finchley, London, N.W. 12. [S.]
- Bull, Major Philip Cecil, D.S.O., A.R.C.S. (Lond.), 33, Queen's Gate. London, S.W. 7. [S.; Mentioned in Despatches.]
- Bunbury, Hugh Mills, B.Sc. (Lond. & Bris.), H.M. Factory, Avonmouth, Bristol. [S.; M.]
- Burbridge, Walter Norman, H.M. Factory, Site B., Oldbury, Worcestershire; and 191, Barclay Road, Warley Woods, Smethwick, Staffordshire. [Previously accepted as a Candidate for Final Exam.; M.]
- Burton, Donald, M.Sc. (Leeds), Westbourne, St. Andrew's Avenue, Morley, near Leeds. [M.]
- Burwell, Robert Parmenter, B.Sc. (Lond.), Penryn, Temple Road, Stow-market, Suffolk. [M.]
- Butler-Jones, Frank, B.A. (Cantab.), 124, Inderwick Road, Crouch End, London, N. 8. [M.]
- Carpenter, Charles William, M.Sc. Tech. (Manc.), 7, Unity Road, Stow-market, Suffolk. [M.]
- Carter, Sydney Raymond, M.Sc. (Birm.), The University, Birmingham.
- Charlwood, Ernest William Arthur, B.Sc. War. (Lond.), 20, Church Road, Croydon, Surrey. [M]
- China, Lieut. Frederick John Edwin, B.Sc. (Lond.), 19, Lebanon Gardens, West Hill, Wandsworth, London, S.W. 18. [Govt. Lab.; S.]
- Christelow, Captain Joseph William, B.Sc. (Lond.), 10th Corps School, B.E.F., France. [M.]
- Clark, Robert, A.I.D., c/o Messrs. Campbell Achnach & Co., 10, Commerce Street, Glasgow. [I.I.; S.; A.I.D.]
- Collins, Bert Amos, B.Sc. (Birm.), Graisley Lane, Wednesfield, Wolverhampton. [M.]
- Cooke, Captain John Harbourne, B.A. (Dub.), A.R.C.S.I., Dungarvan, Co. Waterford. [S.]

Coppin. Neel Guilbert Stevenson, M.Sc. (Liv.). 138, Greenway Road, Runcorn, Cheshire. [M.]

Cottrall, Leslie George, B.Sc. (Lond.), 28, Chestnut Grove, New Malden, Surrey. [S.; M.]

Cremer, Herbert William, B.Sc. (Lond.), Staff Residence, H.M. Factory, Queensferry, Cheshire: and Preston Lea, Faversham, Kent. [M.]

Crow, Alexander, B.Sc. (Lond.), 9, Cornwall Gardens, Willesden Green, London, N.W. 10. [Govt. Lab.]

Crowther, Lieut. Horace Leslie, R.N.V.R., M.Sc. (Birm.), The Beeches, West Bromwich; and R.N. Air Station, Sleaford, Lines. [S.]

Cumming, William Murdoch, B.Sc. (Glas.), 31, Mossgiel Road, Newlands, Glasgow. [M.]

Curtis, Raymond, M.Sc. (Shef.), Highfield, Leek, Staffs. [M.]

Davies, Richard Owen, B.Sc. (Wales), Nobel's Explosives Co., Ltd., Ardeer, Stevenston, Ayrshire, Scotland. [M]

Davison, William, B.Sc. (Lond.), 13, St. Mary's Road, Golders Green, London, N.W. 4. [M.]

Donaldson, James William, B.Sc. (Edin.), 63, Finlay Drive, Dennistoun, Glasgow. [M.]

Doyle, Arthur Lawton. B.Sc. (Manc.), 28, Greenhill Road, Woodseats, Sheffield. [Admiralty.]

Dunn. Frederick Percy, B Sc. (Manc.), 11, Vernon Road, Edgbaston, Birmingham. [M.]

Dunsmore, Adam, 24, Polwarth Gardens, Edinburgh. [I.I.; S.]

Edwards, John, B.Sc. (Birm.), 217, Great Colmore Street, Edgbaston, Birmingham. [M.]

Elliott, Lieut. Joseph Campbell, M.C., A.R.C.S.I., Herbert House, 75, Pembroke Road, Dublin. [S.]

Evans, Evan Thomas, B.Sc. (Wales), H.M. Factory, Que ensferry, Chester. [M.]

Evans, Harold Edward, B.Sc. (Birm.), 32, Oppidans Road, Primrose Hill, London, N.W. 3. [Govt. Lab.]

Fairbourne, Arthur, M.Sc. (Manc.), Research Department, Royal Arsenal, Woolwich, London, S.E. 18. [M.]

Farrar, Stanley Campbell, B.Sc. (Lond.), D.I.C., 50, Holly Road, Handsworth, Birmingham. [M.]

Fearon, William Robert, B.A., B.Sc. (T.C.D.), The Bio-Chemical Laboratory, Cambridge; Emmanuel College, Cambridge. [Food Ministry.]

Fowweather, Frank Scott, M.Sc. (Liv.), 62, Dale Street, Liverpool.
[M.]

Frith, Captain James Stretton, Ascog, Thelwall, Warrington, Lancs. [I.I.; S.; Mentioned in Despatches.]

Gee, Frank Houghton, B.A., B.Sc. (Oxon.), 86, Ridgway, Edgbaston, near Birmingham. [M.]

- Gibbs, William Edward, D.Sc. (Liv.), The Government Rolling Mills, Southampton. [A.I.D.; Govt. Rolling Mills.]
- *Gibson, William Howicson, D.Sc. (Lond.), 23a, Wellington Road, Old Charlton, Kent. [M.]
- Gilmour, George Van Barneveld, B.Sc. (Lond.), A.R.C.S.I., 48, Cherington Road, Hanwell, London, W. 7. [Foodstuffs.]
- Goldsmith, Leon Daniel, A.R.C.S., B.Sc. (Lond.), 31, Colvestone Crescent, West Hackney, E. 8. [Electric Lamp Works.]
- Gollop, Harry, B.Sc. (Wales), Craigdale, Forbes Road, Faversham, Kent.
- Gray, Staff-Lieut. George, M.Sc. (Liv.), Trench Warfare Research Division, Avenue House, 21, Northumberland Avenue, London, W.C. 2. [S.; Mentioned in Despatches; M.]
- Hackney, Norman, B.Sc. (Lond.), 80, Barkham Terrace, Lambeth Road, London, S.E. 1. [S.]
- Hall, Eric Morgan, B.Sc. (Birm.), 51, Doughty Street, London, W.C. 1.
 [Govt. Lab.]
- Hall, John Frederick, B.Sc. (Lond.), A.R.C.S., 38, Richmond Hill, Langley, near Birmingham. [M.]
- Hamilton, Robert Russell, M.A., B.Sc. (Glasg.), 7, Willow Lane, East Huddersfield. [M.]
- Hampson, Lieut: Robert Ernest Victor, M.Sc. (Liv.), Simpson Hill House, Heywood, Lancs. [S.]
- Harler, Campbell Ronald, B.Sc. (Lond.), 19, Mulgrave Place, Woolwich, London, S.E. 18. [M.]
- Harwood, Henry Francis, M.Sc. (Manc.), Ph.D. (Heidelberg), Royal College of Science, South Kensington, London, S.W. 7. [M.]
- Harrap, Frank Nettleton, B.Sc. (Leeds), 78, Dumbreck Road, Eltham, London, S.E. 9. [M.]
- Henstock, Herbert, M.Sc. (Vict.), Ph.D. (Zurich), Meole Brace, near Shrewsbury; and Chemical Research Department, Royal Arsenal, Woolwich, London, S.E. 18. [M.]
- Higson, Geoffrey Isherwood, M.Sc. (Liv.), 11, Westbourne Road, Birkdale, Lancashire. [S.; M.]
- Himus, Godfrey Wilfred, B.Sc., A.R.C.S. (Lond.), Estcourt, Arthur's Hill, Shanklin, Isle of Wight. [S.; M.]
- Hiscock, Walter George, B.Sc. (Lond.), The Firs, Stowmarket, Suffolk. [M.] Holroyd, Thomas Arthur, M.Sc. (Leeds), Hangingstone, Ilkley, Yorkshire. [Dves.]
- Hothersall, William Christian, M.Sc.Tech. (Manc.), 2, Devonian Villas, Belle Grove, Welling, Kent. [S.; M.]
- Howlett, Leslie Horace, B.Sc. (Lond.), A.R.C.S., Crown Boarding House, Saltcoats, Scotland. [M.]
 - * Under provision on p. 17 of the Regulations.

Hudleston, Captain Lawsen John, B.Sc. (Lond.), M.C., 68, Parliament Hill, Hampstead, London, N.W. 3. [S.; M.]

Hunter, Sydney Faulkner, 21, Bedford Street, Liverpool. [Previously accepted as a Candidate for Final Exam. M.]

Islip, Harold Thomas, Stilton, St. Mark's Road, Maidenhead, Berks. [Finsbury Tech. Coll. Certif.; S.]

Jackson, Frederick William, A.C.G.I., B.Sc. (Lond.), 1, Hill Grove Crescent, Kidderminster. [M.]

Jenkin, 2nd Lieut, Charles Oswald Frewen, B.A. (Cantab.), H.M. Factory, Sandycroft, near Chester. [S.; M.]

Jensen, Harold Rupert, M.Sc. (Liv.), 5, Coniston Avenue, Wallasey, Cheshire. [Drugs.]

Jewell, William Ralph, B.Sc. (Melbourne), Arsenal Branch, Australia House, Strand, London, W.C. 2. [M.]

Johnson, Lieut. John Carroll, 9, Well Road, Hampstead, London, N.W. 3. [Finsbury Tech. Coll. Certif.; M.]

Johnson, William, M.Sc. (Leeds), Hangingstone, Ilkley, Yorkshire. [M.] Jones, Lieut, George Joseph, A.R.C.S.L., M.I.D., University College Hall,

Eal ng, Lendon, W. 5. [S.; M.] Jones, James Ivor Morgan, B.Sc. (Wales), Craigdale, Forbes Road, Faver-sham, Kent. [M.].

Joyner, Captain Reginald Arthur, B.Sc. (Lond.), M.Sc. (Bris.), Dipl. Ing., Dr. Ing. [(Karlsruhe), 38, Sidney Street, Salterats, Scotland. [S.; M.]

Judd, Clifford William, B.Sc. (Wales), Maythorne, Ardrossan, Road, Saltcoats, Ayrshire. [M.]

Kerr, Peter, M.A., B.Sc. (Edin.), 99, Ruskin Road, Crewe. [I.I.; M.]

King. Captain John, 51, Lady Bay Road, West Bridgford, Notts. [Univ. Coll., Notts.; S.; Mentioned in Despatches.]

King, William Evans, A.R.C.S., 24, Tantallon Road, S.W. 12. [Research, Refractory Materials.]

Lane, Kenneth Westmacott, B.A. (Oxon), Beaudesert Rectory, Henley-in-Aiden, Birmingham. [S.; M.]

Lea, Staff-Licut. Henry Turner, M.Sc. (Birm.), Edgeote, Ashby Road, Burton-on-Trent. [Govt. Lab.; S.]

Lewis, Robert Illtyd, B.Sc. (Wales), Craigdale, Forbes Road, Faversham, Kent. [M.]

Linzell. Staff-Sergeant Leslie, 2nd London Veterinary Hospital, St. Stephens, St. Albans, Herts. [Finsbury Tech. Coll. Certif.; S.]

Lloyd, John Lewis, B.Sc. (Wales), Regent House, Penrhyndeudraeth, N. Wales. [M.]

Lodge, George, A.R.C.S.I., Summer Hill, Tramore, Co. Waterford, Ireland. [Dyes.]

- Massen, James Irvine Orme, M.Sc. (Melbourne), Research Department, Royal Arsenal, Woolwich, London, S.E. 18. [M.]
- McCall, Robert, M.A., B.Sc. (Edin.), 23, Bellevue Crescent, Ayr, Scotland. [8, ; M.]
- McLachlan, Corporal Thomas, D.C.M., A.C.G.I., 23, Clarendon Road, Lewisham, London, S.E. 13. [S.]
- McLeod, Joseph, c/o Messrs. Chance & Hunt, Ltd., Oldbury, Near Birmingham. [I.I.; M.]
- Mendoza, Elias, 53, Manor Road, London, N. 16. [Finsbury Tech. Coll. Certif.; I.I.; R.A.F.]
- Menzies, Robert Charles, B.Sc. (St. Andrews), Messrs. A. Boake, Roberts & Co., Stratford, London, E. 15. [M.]
- Merheim, Germain, A.R.C.S. (Lond.), Lyndhurst, Hawarden, Cheshire. and H.M. Factory, Queensferry, Chester. [S.; M.]
- Miles, Frank Douglas, A.R.C.S., M.Sc. (Lond.), 8, George Street, Carlisle.
- Monteith, William, B.Sc. (Glas.), 287, Onslow Drive, Dennistoun, Glasgow. [S.; M.]
- Moore, Arthur, B.Sc. (Manc.), 58, Maryon Road, Charlton, London, S.E. 7. [M.]
- Moore, Cadet George William, Messina Lodge, Mayow Road, Forest Hill, London, S.E. 23. [Finsbury Tech. Coll. Certif.; I.I.; S.]
- Munro, Arthur Macdonald, M.A. (Oxon), 44, Rossett Road, Blundellsands, near Liverpool. [M.]
- Napier, Lieut. Oswald James Walter, M.A. (Cantab.), Room 653, Air Board Office, Hotel Cecil, Strand, London, W.C. 2. [M.; S.]
- Northover, Captain Roland, East View, Stanhope Road, Highgate, London, N. 6. [Univ. Coll., Lond.; S.]
- Oakley, Percy Dale, B.Sc. (Lond.), 205, South Park Road, Wimbledon. London, S.W. 19. [I.I.; M.]
- Parke, Victor Emmanuel, M.A., B.Sc. (Edin.), 11, Jameson Place, Leith. [M.]
- Parker, Albert D.Sc. (Birm.), The University, Birmingham. [M.]
- Parker, Lieut. Leslie Henry, B.A. (Cantab.), Holmesdale, Kingston Road, Leatherhead, Surrey. [S.; M.]
- Payman, Joseph, M.Sc.Tech. (Manc.), 7, Darlington Street, Cheetham, Manchester. [Dyes.]
- Pemberton, Edgar Stagg, B.Sc.War (Lond.), 41, Bramford Lane, Ipswich, Suffolk. [M.]
- Perry, Lieut, Guy Allan, B.A. (Cantab.), Lincoln House, 28, Percy Street, Fartown, Huddersfield. [S.; M.]
- Phillips, David John Prichard, B.Sc. (Wales), 31, Church Hill, Spondon, Derby. [M.]

Phillips, Richard, B.Sc. (Wales), 5, Oakdale Road, Liverpool. [M.]

Price, Tudor Williams, M.Sc. (Wales), B.A. (Cantab.), Gowanlea, Caledonia Road, Salteoats, Scotland. [M.]

Rait, Lieut. Patrick Walker, 6, Ibrox Place, Ibrox, Glasgow. [Roy. Tech. Coll., Glasgow; I.I.; S.]

Rawling, Cadet Sidney Owen, B.Sc (Lond.), Tresco, Launceston, Cornwall. [S.]

Reilly, Joseph, M.A., D.Sc. (N.U.I.), F.R.C.S.I., St. Ambrose, Woodside Road, Lower Parkstone, Dorset. [M.]

Reynolds, Grace Lechmere, B.Sc. (Wales), c/o Solway Dyes Co., Murrell Hill Works, Carlisle. [Dyes.]

Roberts, Muriel, B.Sc. (Liv.), 36, The Judges Drive, Newsham Park, Liverpool. [Food and Drugs.]

Roberts, Oswald, B.Sc. (Liv.), 1, Everest Road, Eltham, London, S.E. 9. [M.]

Rowe, Frederick Maurier, M.Sc. (Leeds). 5, Woodbine Terrace, Latchford. near Warrington, Lancs. [Research.]

Royal-Dawson, Henry, 155, Bradford Road, Huddersfield. [Univ. Coll., London; Dyes.]

Rudge, Ernest Albert, B.Sc. (Lond.). Central Laboratory, G.H.Q., 2nd Echelon, B.E.F., France. [M.]

Sandilands, James, 1, Shorthope Street, Musselburgh, Midlothian, Scotland.
[I.I.; M.]

*Savage, Herbert, 48, Portsdown Road, Maida Vale, London, W. 9. [King's Coll., Lond.; Research.]

Scott, Robert, M.A., B.Sc. (Glas.), 4. Temple Road, Stowmarket, Suffolk. [M.]

Scully, Gerald Creagh, M.A. (Cape of Good Hope), 19, Mancott Royal, Hawarden, Flintshire. [M.]

Sellars, Captain Edwin Lloyd, M.C., M.Sc. (Manc.), 40. Centenary Terrace, Hooley Hill, near Manchester. [S.; M.]

Sheldon, Norman, A.R.C.S. (Lond.), Cremlin, Highgate, Walsall. [M.]
Sheldon, Wilfred, W.Sc. (Vict.), 143, Bond Street, Vacclesfield, Cheshir

Sheldon, Wilfred, M.Sc. (Vict.), 143, Bond Street, Macclesfield, Cheshire. [S.; M.]

Shipston, Lieut. Geoffrey Thomas, B.Sc. (Lond.), Auckland House, Crane Hill, Ipswich. [I.I.; S.]

Silvester, William Arthur, M.Sc. (Sheffield). The Farm, H.M. Factory, Asiastic Petroleum Co., Ltd., Sandycroft, near Chester. [M.]

Slater, Lieut. Leonard, M.Sc.Tech. (Manc.), Eden Curwens, Howard Place, Carlisle. [S.; M.]

Smeath-Thomas, John, D.Sc. (Liv.), 18, Gresford Avenue, Sefton Park, Liverpool. [M.]

^{*} Under provision on p. 17 of Regulations.

- Smith, Henry Edgar, M.Sc. (Birm.), 90. Lightwoods Hill, Warley, Birmingham. [M]
- Smith, Joseph de Carle, B.Sc. (Lond.), West Lodge, Albemarle Road, Norwich. [M.]
- Spensley, James Carter, M.A. (Cape of Good Hope), Central Laboratory, H.M. Factory, Gretna. [M.]
- Spiers, Henry Michael, B.Sc. (Lond.), B.A. (Cantab.), Admiralty Laboratory, Point Pleasant, S.W. 18. [Admiralty.]
- Stephens, Francis George Coad, The Cottage, Tenter Hill, New Mill, Huddersfield. [Finsbury Tech. Coll. Certif.; Dyes.]
- Stones, Geroge Bertram, B.Sc. (Viet.), 37, Edgbaston Road, Smethwick, Birmingham. [M.]
- Stopford, Thomas Rinck, M.Sc. (Vict.), Woodbank, Macclesfield. [Govt. Work.]
- Sugden, Lieut. James Netherwood, B.Sc., A.R.C.S. (Lond.), D.I.C., 12, Burstock Road, Putney, London, S.W. 15. [S.]
- Sugden, Reginald, M.Sc. (Leeds), 84. Tong Road, Leeds. [Works Research.]
- Sugden, Samuel, A.R.C.S. (Lond.), Alma House, Upper Wickham Lane, Welling, Kent. [S.; M.]
- Symonds, Gwilym, B.Sc. (Wales), 21, Marlborough Road, Waterloo, Liverpool. [M.]
- Taberner, Edwin, B.Sc. (Manc.), Acids Section, H.M. Factory, Gretna, Scotland. [S; M.]
- Taylor, Arthur, M.Sc. (Leeds), 60, Maryon Road, Charlton, London, S.E. 7.
 [M.]
- Thomas, Alfred Ernest, B.Sc. (Wales), Burnside Cottage, Kilwinning, Ayrshire. [M.]
- Timbrell, John, B.Sc. (Lond.), 40, Beeches Road, West Bromwich, Staffs. [M.]
- Turner, Eustace, Ebenezer, M.Sc. (Lond.), Sidney Sussex College, Cambridge. [Dyes Research.]
- Upton, Adolph William Henry, A.C.C.I., Brooklyn, Tavistock Road, South Woodford, Essex. [Research.]
- Vakil, Kapilram Hardevram, B.A. (Bombay), M.Sc.Tech. (Manc.); Santa Cruz, Bombay, India. [Dyes.]
- Walker, Thomas Kennedy, B.Sc. (Manc.), Meadow Bank, Hollingworth, Near Manchester. [M.]
- Walsh, Michael Joseph, M.A. (N.U.I.), The Continuous Reaction Co., Ltd., Newton Works, Hyde, Cheshire. [M.]
- Wardlaw, William, M.Sc. (Dun.), The University, Edmund Street, Birmingham. [M.]
- Warneford, Francis Henry Sweeting, B.A. (Cantab.), B.Sc. (McGill), Christ's College, Cambridge. [M.]

- Watt. 2nd Lieut. Joseph James, B.Sc. (Lond.), 1, Coventry Road, Ilford, Essex. [S.]
- Webb, 2nd Lieut. Harry William, M.Sc. (Birm.), 29, South Road, Smethwick, Birmingham. [S.; M.]
- Webb, Captain Henry Marshall, B.Sc. (Lond.), Oak Croft, Chirk, Denbighshire, [I.I.: S.]
- Wheeler, Edward, A.C.G.I., Ailsa View, 10, Melbourne Terrace, Saltcoats, Ayrshire, Scotland. [M.]
- White, Albert Greville, B.Sc. (Wales), Gowanlea, Caledonia Road, Saltcoats, Scotland. [S.; M.]
- White, Gerald Noel, B.Sc. (Lond.), 15, West End Avenue, Pinner, Middlesex. [M.].
- Wignall, Harry, M.Sc. (Manc.), 16, Roseneath Road, London, S.W. 11, [Admiralty.]
- Wilkins, Charles Reginald, B.Sc. (Lond.), 8, Crookston Road, Eltham, London, S.E. 9. [Food]
- Williams, David Emrys, B.Sc. (Wales), Mwch-y-don, Ellington Road, Burryport, Carmarthenshire. [M.]
- Williams, Captain Evan Clifford, B.Sc. (Manc.), 30, New North Road, Huddersfield. [S.; M.]
- William Turner Horace, B.Sc. (Aberd.), 36, Gladstone Place, Aberdeen. [Govt. Research.]
- Wilson, Fred Ernest, B.Sc. (Lond.), 20, Dallin Road, Shooters Hill, London, S.E. 18. [M.]
- Wood, Arthur Samuel, B.Sc. (Lond.), 47, Upland Road, Selly Park, Birmingham. [Research.]
- Woodmansey, Arnold, B.Sc. (Leeds), 12, Ridgeway Terrace, Hyde Park, Leeds, [M.]
- Wynn, Cadet William Owen Roderick, 48, Hawcoat Lane, Barrow-in-Furness. [Previously accepted for Final Exam.; S.]
- Young, James, Trem Haul, Penrhyndeudraeth, N. Wales. [Finsbury Tech. Coll. Certif.; I.I.; M.]

New Students.

- Atkinson, Clifford, 12, Camberley Street, Dewsbury Road, Leeds.
- Bagshaw, Cyril Rowbottom, 126, Grange Avenue, Werneth, Oldham.
- Bevan, Abram, Woodlands, Gowerton, Glamorgan, S. Wales.
- Brown, Frederick Stanley, Resebank, Tile Hill Lane, Near Coventry.
- Davidsen, George, 670, Dumbarton Road, Partick West, Glasgow.
- Dhavale, Bhaskar Balvant, M.A. (Bembay), 28, Palm Street, Slade Lane, Longsight, Manchester.
- Douglas, Gorden Watsen, Dunure, Westville Avenue, Ilkley, Yorkshire.
- Evans, Norman Leslie, 19, Durham Road, Sparkhill, Birmingham.
- Greenwood, Gladys May, 18, Devenshire Road, Blackpool, Lancashire.

Gregory, Thomas Edmund, 57, Cranbrook Road, Redland, Bristol.

Higham, Frank, 57, Widdrington Road, Coventry.

Hutchins, Kathleen Mary Burrows, 30, Willoughby Road, Hampstead, London, N.W. 3.

Jackson, Stanley Ridings, 13, Dover Street, C.-on-M., Manchester.

Joseph, David Lavington Glyde, Gwyrfain, Leigham Avenue, Streatham, London, S.W. 16.

Laiwala, Kumudchandra Ghelabhai, 26, Bernard Street, Russell Square, London, W.C. 1.

Macdonald, John Hendry, M.A., B.Sc. (Aberd.), 33, Elibank Road, Eltham, London, S.E. 9.

Matthews, Norman Louis, 45, Tyrwhitt Road, Brockley, London, S.E. 4.

Murphy, Edward Arthur, 29, Arthur Road, Erdington, Birmingham.

Newby, Cecil Frank John, 21, Basils Road, Stevenage, Herts.

Rowe, James Walker, 14, Lawn Cresent, Kew Gardens, Surrey.

Roxburgh, Andrew, 271, Clifton Road, Rugby.

Sparling, Ellen Emma, St. Monica's, 19, Brooke Street, Holborn, E.C. 1.

Change of Name.

Weintroube, Jacob (Associate) to Winfield.

DEATHS.

Fellows.

Carruthers, George MacLellan (killed in action).
Eastick, John Joseph, A.R.C.S.
Holloway, George Thomas, A.R.C.S. (Member of Council).
Symons, Major William Henry, R.A.M.C.
Williams, John.

Associate.

Geake, Joseph John.

Students.

Eastman, 2nd Lieut. William Vivaish (killed in action). Garnett, Lieut. Kenneth Gordon, M.C. (died of wounds). Hofmeyr, Lieut. Richard (died of wounds). Nixon, Lieut. Cyril John, R.F.C. (accidentally killed).

General Notices.

Examinations.—The Council give notice that Examinations will not be held in January, 1918. Future arrangements will be announced in due course.

Notice to Associates.—Associates elected prior to November, 1914, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, can obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in securing appointments for qualified chemists.

The Library.—The Library is open for the use of Fellows, Associates and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. and 2 P.M.), except when examinations are being held.

Members and Students Serving with the Forces.— Members and Registered Students serving with the Forces are welcome at the Institute when they are in London and will be provided with light refreshment at all convenient times. The Prisoners of War Book Scheme (Educational).

—The Council have been asked to direct the attention of the Fellows and Associates to the above scheme, the object of which is to provide prisoners of war interned in enemy or neutral countries with books for the purposes of study. A Bureau has been established for this purpose, and it is hoped by this means to help our fellow-countrymen who have fallen into enemy hands to endure the rigours of captivity and fill their days with some interesting and purposeful occupation in order to fit them the better for the future.

Among them are many professional men of technical training to whom books on chemistry and allied sciences and on technological subjects will be very welcome. The scheme may be assisted by gifts of money or by gifts of books. In the latter case a list of the books offered (giving, if possible, the date or edition) should be sent in the first instance to the Bureau. All communications should be addressed to A. T. Davies, Esq., C.B., Chairman and Hon. Director, Victoria and Albert Museum, South Kensington, London, S.W. 7. The words "Prisoners of War" should be written in the left-hand top corner of the envelope of letters relating to the scheme.

PRESENT POSITION OF THE BUILDING FUND.

RECEIPT			_	Expendit			
Contailutions	£ 17.652	8. 10		Cita Duilding and	£	8.	d.
Contributions Dividends and In-	17,002	14	U	Site, Building and equipment costs			
terest	1,149	10	1	to date	20,213	3	3
Realisation of Investments	4,557	0	7	Investments, including Commission	4,806	11	0
Loans	1,749			Interest on Loans	61		8
				Balance at Bank,	-	_	
				Dec. 17th, 1917	28	2	11
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Assets				Liabilit	LES.		
ASSETS		8.	d.		£	8.	
Balance at Bank,	£			Loans			
Balance at Bank, Dec. 17th, 1917	£	8. 2		Loans Outstanding ac-	£		
Balance at Bank, Dec. 17th, 1917 Legacy from the late	£			Loans Outstanding accounts estimated	£ 1,749	14	2
Balance at Bank, Dec. 17th, 1917 Legacy from the late Edward Riley,	£ 28	2	11	Loans Outstanding accounts estimated at	£ 1,749 647	14	2
Balance at Bank, Dec. 17th, 1917 Legacy from the late Edward Riley, Esq., F.I.C	£	2	11	Loans Outstanding accounts estimated at Interest on Loans	£ 1,749	14	2
Balance at Bank, Dec. 17th, 1917 Legacy from the late Ed ward Riley, Esq., F.I.C. Outstanding Promises	£ 28	2	11	Loans Outstanding accounts estimated at	£ 1,749 647 10	14 11 0	2
Balance at Bank, Dec. 17th, 1917 Legacy from the late Edward Riley, Esq., F.I.C Outstanding Pro- mises Approximate	£ 28 1,000	2	11	Loans Outstanding accounts estimated at Interest on Loans Further equipment	£ 1,749 647 10	14 11 0	8 0
Balance at Bank, Dec. 17th, 1917 Legacy from the late Ed ward Riley, Esq., F.I.C Outstanding Promises Approximate amount yet re-	£ 28 1,000 521	2 0 2	0 0	Loans Outstanding accounts estimated at Interest on Loans Further equipment	£ 1,749 647 10	14 11 0	8 0
Balance at Bank, Dec. 17th, 1917 Legacy from the late Edward Riley, Esq., F.I.C Outstanding Pro- mises Approximate	£ 28 1,000	2 0 2	0 0	Loans Outstanding accounts estimated at Interest on Loans Further equipment	£ 1,749 647 10	14 11 0	8 0
Balance at Bank, Dec. 17th, 1917 Legacy from the late Ed ward Riley, Esq., F.I.C Outstanding Promises Approximate amount yet re-	£ 28 1,000 521	2 0 2 0	11 0 0	Loans Outstanding accounts estimated at Interest on Loans Further equipment	£ 1,749 647 10	11 0 0	8 0

30, Russell Square, London, W.C. 17th December, 1917.

11:

Old and New Methods of Burning Gas.

It is always fascinating to anyone who is scientifically minded to trace out the sequence of changes introduced into a technical process with the progress of time. The Gas Industry provides many opportunities for studies of this kind, not the least interesting of which is the complete inversion during the past twenty years of the methods of consuming gas. In the days of the luminous flame burner a process of deferred combustion was found to yield the best results from the point of view of light production, whereas the object aimed at nowadays is to make the combustion as nearly as possible in stantaneous.

The chemist will recall that in the case of the argand and flat flame burners the light emitted originated in the incandescent particles of free carbon liberated by the decomposition of the heavy hydrocarbon constituents in the gas; and that in order to keep these particles in the incandescent state for the longest possible time and thereby increase the luminosity of the flame, the air supply to the flame was reduced as low as was consistent with perfect combustion. The complex chemical changes involved in the production of such a flame were partly endo-thermic but mainly exo-thermic, and were the subject of much interesting experimental enquiry by Dr. Frankland, Sir Humphry Davy and others.

Modern gas lighting, however, involves the preparation of the gas and its subsequent very rapid combustion—so rapid indeed that the carbon particles appear to have no separate existence at any time, the whole of the combustible matter being quickly oxidized with the production of a very hot flame.

This change in the method of developing the potential energy of gas naturally calls for some enquiry as to the best composition of gas for the economic production of light, and much progress is possible along these lines.

For further information apply to— The British Commercial Gas Association, 47, Victoria Street, Westminster, S.W. 1.

INSTITUTE OF CHEMISTRY.

PUBLICATIONS.

Regulations for the Admission of Students, Associates and Fellows. Gratis.

Examination Papers: Annual Sets, Sixpence each. (Post free 7d.)

Proceedings, Four Parts Annually. Each Part, One Shilling.
(Post free 1s. 1d.)

History of the Institute: 1877-1914, 5s.; Special Edition, 15s.

LECTURES.

These Lectures were given under a scheme the aim of which is to indicate to advanced students the scope and object of work actually carried out by professional chemists in various branches of practice.

Cement. Bertram Blount, F.I.C. 2s. 6d.

Cellulose. C. F. Cross, B.Sc., F.I.C. 2s. 6d.

Thorium and its Compounds. Edmund White, B.Sc., F.I.C. 2s. od.

Chemistry in Gas Works. V. J. A. Butterfield, M.A., F.I.C. 2s. 6d.

The Function and Scope of the Chemist in a Pharmaceutical Works. C. A. Hill, B.Sc., F.I.C. 2s. od.

The Research Chemist in the Works, with Special Reference to the Textile Industry. W. P. Dreaper, F.I.C. 2s. od.

Explosives. William Macnab, F.I.C. 2s. 6d.

ADVERTISEMENTS.

The Council of the Institute have decided to receive for publication in the Proceedings of the Institute, advertisements from British Companies and Firms concerned with British productions:—

Glass, Porcelain and Silica Laboratory Ware. Filter Paper, Chemical Reagents, Scientific

Instruments, Scientific Books and Publications.

Circulation guaranteed over 2,000.

Particulars of terms are obtainable from the Registrar, The Institute of Chemistry, 30, Russell Square, London, W.C. THE

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

FOUNDED, 1877. INCORPORATED BY ROYAL CHARTER, 1885.

PROCEEDINGS.

1918.

PART I.

REPORT OF THE COUNCIL for the Year ending 1st March, 1918. FINANCIAL STATEMENTS FOR 1917. BUILDING FUND.

PROCEEDINGS OF THE COUNCIL: DEC., 1917—JAN., 1918: Portrait of Prof. Meldola; Glass Research; Officers and Members of Council;

Professional Organisation; Certified Occupations.

MEMBERS AND STUDENTS WITH THE FORCES. THE REGISTER.

NOTICES: Examinations; Appointments Register, &c.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary.

30, Russell Square, London, W.C. 1. February, 1918.

Proceedings Committee, 1917-18.

HORATIO BALLANTYNE (Chairman),
SIR JAMES J. DOBBIE (President),
CECIL H. CRIBB,
M. O. FORSTER,
ERNEST M. HAWKINS,
ALEXANDER LAUDER,
D. NORTHALL-LAURIE,
P. A. ELLIS RICHARDS,
W. H. ROBERTS,
W. LINCOLNE SUTTON,
THOMAS TICKLE.

REPORT OF THE COUNCIL

(1917-1918).

To be submitted to the Fellows and Associates of the Institute at the Fortieth Annual General Meeting, to be held on Friday, March 1st, 1918.

I. THE ROLL OF THE INSTITUTE.

Since the publication of the Report for 1916—1917 the Council have elected 110 Fellows (of whom 32 were Associates and 2 Registered Students), 304 Associates (of whom 79 were Registered Students), and 56 new Students.

The Council record with regret the death of 22 Fellows, 2 Associates and 9 Registered Students:—

FELLOWS.

Sub-Lieut. Montague Samuel Baker. James Hector Barnes, B.Sc. (Birm.). Joseph Arthur Brown. John Cope Butterfield. Lieut. George MacLellan Carruthers. John Kent Crow, D.Sc. (Lond). John Joseph Eastick, A.R.S.M. 2nd Lieut. John Robertshaw Hill,

B.A. (Cantab.).
George Christian Hoffmann, LL.D.
(Queen's Univ., Canada).
George Thomas Holloway, A.R.C.S.
Lieut. Herbert King, M.Sc. (Vict.).
Ralph Waldo Emerson MacIvor.
Samuel Ollerenshaw.
Robert Barnabas Pollitt.
John Henry Smith, Ph.D. (Zurich),

A.R.C.S.I. Francis Sutton. Major William Henry Symons, M.D. William Scott Tebb, M.A., M.D. Thomas Utrick Walton, B.Sc. (Glas.). John Williams. Charles Henry Wood. Reginald Cowdell Woodcock.

Associates.

Capt. Norman Phillips Campbell, B.A. (Oxon.). Joseph John Geake.

STUDENTS.

2nd Lieut. William Vivaish Eastman. Lieut. Kenneth Gordon Garnett, M.C. 2nd Lieut. Charles Oswald Hayward. Lieut. Richard Hofmeyr. Corporal Robert Gordon Kind. Lieut. Cyril John Nixon. Lieut. Arnott Andrew Patterson. Lieut. John Holder Stearn, D.S.O. Arthur Guthrie Tye. Of the above, the following died on active service:

SUB-LIEUT. MONTAGUE SAMUEL BAKER.
JOSEPH ARTHUR BROWN.
CAPT. NORMAN PHILLIPS CAMPBELL, B.A. (OXON.).
LIEUT. GEORGE MACLELLAN CARRUTHERS.
2ND LIEUT. WILLIAM VIVAISH EASTMAN.
LIEUT. KENNETH GORDON GARNETT, M.C.
2ND LIEUT. CHARLES OSWALD HAYWARD.
2ND LIEUT. JOHN ROBERTSHAW HILL, B.A. (CANTAB.).
LIEUT. RICHARD HOFMEYR.
CORPORAL ROBERT GORDON KIND.
LIEUT. HERBERT KING.
LIEUT. CYRIL JOHN NIXON.
LIEUT. ARNOTT ANDREW PATTERSON.
LIEUT. JOHN HOLDER STEARN, D.S.O.
ARTHUR GUTHRIE TYE.

The resignations of I Fellow, I Associate, and I Student have been accepted. The name of I Fellow has been removed from the Register.

At the date of this Report (January 25th, 1918), the Register contains the names of 1356 Fellows and 491 Associates—an increase during the year of 355 Members. The number of Registered Students is 370, a decrease of 36.

2. THE WORK OF THE COUNCIL.

The Council have held 13 meetings, and there have been in addition 56 meetings of Committees, Boards and Sub-Committees.

The following is a list of Committees of the Council and their respective Chairmen:—

COMMITTEE.				CHAIRMAN.
Finance				The Hon. Treasurer.
House		***		George Stubbs.
Institutions				Martin Onslow Forster, VP.
Library				The Hon. Treasurer.
Nominations and	Exai	ninatio	ns	The President.
Proceedings				Horatio Ballantyne.
Public Appointme	ents			The President.

SPECIAL COMMITTEES.

Overseas Branches.—The Special Committee appointed to consider and report on the suggestion that steps should be taken to establish Overseas Branches of the Institute learned from the Hon. Corresponding Secretaries and other Fellows who kindly inquired into the matter that, as in the case of chemists in the Union of South Africa, those in other Overseas Dominions had decided that it would be more practicable to form independent organisations with much the same constitution as that of the Institute and working in friendly cooperation with it, than to establish branches affiliated to the Institute. The proposal, which in the first instance was raised by chemists in Australia and Canada, has therefore been abandoned.

General Purposes Committee.—This Committee was appointed in November, 1917, to consider and report on steps to be taken for the further development of the aims and work of the Institute. (See p. 12.)

Glass Research.—(See p. 8.)

REPRESENTATIVES.

The President and Sir Herbert Jackson, Vice-President, have been reappointed for the year 1918 as representatives of the Institute on the Board of Scientific Societies. An abstract of the recent report of the Board was given in Proceedings, Part IV., 1917.

Sir Herbert Jackson has continued as representative of the Institute on the Standing Committee on Glass and Optical Instruments of the Department of Scientific and Industrial Research.

Dr. Arthur Harden, Vice-President, has been appointed to act as the representative of the Institute in the event of the formation of a Standing Committee of Professional Bodies in connection with the scheme of the Board of Education for the better organisation of examinations in secondary schools.

DEATH OF MR. GEORGE T. HOLLOWAY.

In October, 1917, the Council had to record with deep regret the death of their colleague, Mr. George T. Holloway. As his term of office as a Member of Council had nearly expired the vacancy was not filled.

3. FINANCE.

General Account.—In the Report for 1916—1917 the Council mentioned that the loan from the bank had been reduced from £5,500 to £1,250. A further reduction of £550 has since been effected.

The subscriptions and entrance fees received in 1917 showed a considerable increase over those for 1916, due mainly to the election of new Members.

A sum of £88 4s. 3d, was recovered on Income Tax paid during 1915—1917.

The general expenditure has been carefully controlled, although unusual pressure of the work in the office has affected considerably the items for printing and postage and has necessitated additions to the staff.

The item for miscellaneous expenses includes travelling expenses in connection with meetings attended by Members of Council and the Registrar in various parts of the country.

The item for Glass Research, £32 19s., is part of a sum of £200 which the Council agreed to contribute towards this object. The amount expended by the Institute up to the close of 1917 is £114 7s. 8d., exclusive of any charge for the assistance rendered by the staff or other facilities afforded by the Institute.

The accounts for Glass and Clay Research are submitted to the Department for Scientific and Industrial Research and the Department of Optical Munitions and Glassware Supply respectively.

Building Fund .- The contributions received for the Building Fund during 1917 amounted to £209 5s. 6d.

The loan from the General Account of the Institute was increased by £50, and the Council were able to pay f178 12s. 7d. on outstanding accounts.

4. PROFESSIONAL CHEMISTRY AND THE WAR.

The activities of the Institute in connection with questions of enlistment, applications for commissions, special war services and the like have been maintained as hitherto. (See p. 13.)

The Council have pleasure in recording that the following honours have been conferred on Fellows of the Institute during the year :-

BARONET.

Sir Robert Abbott Hadfield, F.R.S.

K.C.M.G.

Major-General Sir Frederick Smith,

G.B.E.

Sir Richard Garton.

K.B.E.

Prof. Herbert Jackson, F.R.S. Gustav Jarmay. Robert Robertson, F.R.S.

C.B.

Col. William Henry Willcox, C.M.G.

C.M.G.

Lieut.-Col. Arthur William Crossley. Lieut.-Col. Edward Frank Harrison.

C.B.E.

Frank William Harbord. Prof. William Richard Eaton Hodgkinson. Prof. William Jackson Pope, F.R.S.

Prof. Jocelyn Field Thorpe, F.R.S.

O.B.E.

Prof. Malcolm James Rowley Dunstan. Robert Crosbie Farmer. Percy John Hinks. George William Macdonald. Harold Moore. Godfrey Rotter. George Stubbs.

M.B.E.

Edgar Reginald Deacon. John Jacob Fox. William Howieson Gibson. Christopher Colborne Graham. George Henry Perry. Francis Martin Potter. Herbert Wallace Roberts. Oliver Trigger.

William Thomas Thomson.

5. THE GLASS RESEARCH COMMITTEE.

During the year under review the Glass Research Committee have reported additions to the lists previously published of formulas devised by Sir Herbert Jackson for the manufacture of various glasses. These include modifications of formulas for glasses previously devised for laboratory purposes, new formulas for glasses into which various metallic wires can be sealed, glass for lamp chimneys, glass for medical purposes and for use in the preservation of food, and a number of optical and other glasses required by the Ministry of Munitions.

The Committee have prepared schemes for testing laboratory glass and porcelain ware, which will shortly be published.

Sir Herbert Jackson, Mr. Horatio Ballantyne, Dr. J. J. Fox, and the Registrar of the Institute have been appointed members of a Glass Research Committee of the Department of Scientific and Industrial Research, with Dr. H. F. Coward as Secretary, to make the necessary arrangements for the conduct of the investigations. The work of the Glass Research Committee of the Institute will continue as hitherto.

6. HOUSE COMMITTEE.

The House Committee have expended a sum of £122 15s. 4d. on essential furnishing and equipment of the new building.

7. EXAMINATIONS.

The constitution of the Board of Examiners remained the same as for the previous year.

Examinations were held in July, 1917, as follows:—

Intermediate Examination:—At the Institute.

Final Examination :-

Mineral Chemistry: -At the Institute.

Metallurgical Chemistry:—At the Royal Technical College, Glasgow.

Organic Chemistry:—At the Institute, and at the Royal College of Science for Ireland, Dublin.

Chemistry of Foods and Drugs, etc. :- At the Institute:

The Examination at Glasgow was held under the supervision of Dr. Cecil H. Desch and Prof. G. G. Henderson, and that at Dublin under the supervision of Prof. Gilbert T. Morgan and Prof. Sydney Young. The following have assisted the Board during the year:—Mr. L. E. Hinkel at the Examinations held in London, and Mr. A. O'Farrelly at the Examination at Dublin.

A Final Examination in Metallurgical Chemistry for the Fellowship was held at Johannesburg in May, 1917, under the supervision of Dr. John McCrae and Prof. G. H. Stanley.

The thanks of the Council for the use of laboratories have been accorded to the Governors of the Royal Technical College, Glasgow, to the Department of Agriculture and Technical Instruction for Ireland, the Governors of the South African School of Mines and Technology, and the authorities of the Government Laboratories, Johannesburg.

The results are summarised in the following table:—

•	EX	AMIN	ED.	PASSED.
Intermediate Examination		4		4
Final (A.I.C.) Examination:—				
Branch (a) Mineral Chemistry		2		1
Branch (b) Metallurgical Chemistry—				
For the Associatehsip		1		1
For the Fellowship		1		1
Branch (d) Organic Chemistry		9		2
Branch (e) Chemistry of Food and Drugs, e	tc.—			
For the Associateship		1		1
For the Fellowship		1		1
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		19		11
		_		-

Owing to the war the Examinations arranged to take place in New Zealand and Nairobi were not held.

Arrangements are being made for the examination of two candidates in Mauritius.

8. REGULATIONS.

In July, 1917, the Council adopted a new scheme of Regulations for the admission of Associates and Fellows.

The main conditions may be summarised as follows:-

Candidates for admission to the Associateship are required to produce evidence of having passed an approved preliminary examination, but in special cases the Council consider other evidence of general education.

The technical training for the Associateship extends over at least four years.

Admission to the Examination for the Associateship is open to:—

 (1) Candidates who have been systematically trained in a recognised University or College;

(2) Candidates who have been trained partly in a recognised University or College and partly under Fellows of the Institute in laboratories or works;

(3) Candidates who have obtained University degrees or other recognised diplomas—the examination for A.I.C. being modified in the cases of those who have taken high honours.

The Council also consider on their merits the cases of Candidates (other than those referred to above), who are upwards of twenty-seven years of age and have been engaged in the study and practice of chemistry for at least ten years.

In exceptional cases a Candidate may be elected to the Associateship without Examination.

Admission to the Fellowship is open to Associates of three years' standing who have—

(i.) carried out original research; or

(ii.) devised processes or inventions; or

(iii.) otherwise satisfied the Council that they are possessed of knowledge and ability equivalent to having fulfilled the conditions contained in (I) and (2).

Failing the above, the Charter requires the Candidate to pass an Examination conducted by the Institute.

In special cases Candidates who have been systematically trained and have had considerable experience may be examined for the Fellowship without passing through the grade of Associateship.

In exceptional circumstances Candidates who have been systematically trained, have had considerable experience and have attained positions of responsibility may be elected to the Fellowship without examination.

As a temporary war measure, the Council have also provided for the admission to the Associateship of properly trained Candidates who have been engaged with the Forces or on work of national importance.

The attention of the Fellows and Associates was directed to the new scheme in Proceedings, Part III., issued in August, and Part IV., issued in December, 1917.

9. PROFESSIONAL ORGANISATION.

The Fellows and Associates are reminded that the Regulations referred to above were the outcome of the Conference of Professors of Chemistry, held in October, 1913. under the auspices of the Institute, when steps were considered towards effecting the more complete organisation of professional chemists, including analysts, consultants, official chemists, teachers and technologists. The general trend of the opinions expressed was in the direction of attaining that object by broadening the Regulations for the admission of Associates. After the Conference, therefore, a Special Committee was appointed to revise the Regulations and, in 1914, a new scheme was formulated which, but for the outbreak of war, would have been discussed by the Institute in General Meeting. Later, however, the Council deemed it advisable to instruct the Nominations and Examinations Committee to proceed with the matter, with the result that a modified scheme was circulated to the Members, who were invited to send in their views and suggestions thereon. After due consideration of the suggestions received, the new Regulations, referred to above, were adopted and issued to the Fellows and Associates in August last.

The effect of the special provisions made for the admission to the Institute of chemists who have been engaged with the forces or on work of national importance has been to secure the support of a considerable number of properly trained and experienced chemists whose accession to the Institute will undoubtedly strengthen its position as the representative body of British chemists.

On October 26th, 1917, the attention of the Council was directed to a notice of a meeting to be held in Manchester, on November 10th, to consider the formation of a British Association of Chemists with objects similar in many respects to those of the Institute. The Council thereupon decided to send representatives to the meeting and to express their general sympathy with the objects of the movement. In the meantime the promoters of the new Association intimated that if the Institute would undertake the furtherance of the objects sought, the necessity for a new Association would not arise. The Council therefore published a circular stating that they would deprecate the formation of other bodies of chemists, as tending to weaken rather than strengthen the profession, expressing their sympathy generally with the aims of the proposed Association and, at the same time, published a statement of the objects and policy of the Institute. An abstract of the report of the meeting was published in Proceedings, Part IV., 1917.

Provisional Committees of the promoters of the Association were formed in the Manchester and Birmingham districts and subsequently in the Liverpool district, and from these an Executive Committee, with Dr. Alfred Rée as Chairman, was selected to meet the Council of the Institute on December 14th, when proposals were submitted which were referred, in due course, to the General Purposes Committee (see p. 5) for consideration.

The Report of the General Purposes Committee was submitted to the Council at a Meeting held on January 18th, 1918, and approved in principle.

The substance of the Report has been issued to the Fellows and Associates, is reproduced in the Proceedings (see p. 21), and has been communicated to the Executive Committee of the proposed Association.

10. PUBLIC APPOINTMENTS.

The Council have made representations to various authorities in matters affecting official chemical appointments and the interests of professional chemistry, to which reference has already been made in the Proceedings.

II. LIBRARY.

The Council and Library Committee record their thanks to all donors of books, journals and pamphlets during the year. The list of additions to the Library will be published in Proceedings, Part II.

12. PORTRAIT OF PROF. MELDOLA.

The Council have much pleasure in reporting that the Institute has been presented with a portrait of the late Prof. Meldola (President, 1912—1915), painted by Mr. Solomon J. Solomon, R.A., a fund for this purpose having been raised privately among friends and admirers by Prof. E. B. Poulton, of Oxford. (See p. 20.)

13. APPOINTMENTS REGISTER.

The Appointments Register continues to prove helpful to Fellows and Associates and to authorities and firms requiring the services of professional chemists.

The register of chemists for war purposes has been maintained and has resulted in many Fellows, Associates and other chemists having received commissions with the forces or appointments in Government and controlled establishments.

14. HONORARY CORRESPONDING SECRETARIES.

The Council record their thanks to the Honorary Corresponding Secretaries for their services.

15. PUBLICATIONS, 1917—1918.

The proceedings for 1917 were published in four parts, issued in February, April, August and December.

30, Russell Square, London, W.C. 1. January 25th, 1918.

REPORT OF THE AUDITORS.

We hereby report that we have examined the Books and Accounts of the Institute for the year ended 31st December, 1917, compared the Vouchers with the entries therein, and certify that the following statements are correct. Certificates from the Bank of England and the London County and Westminster Bank, Ltd., for investments held by them for the Institute at;the above date have been produced.

L. T. THORNE, JAMES CONNAH, $\left. \begin{array}{l} Hon. \\ Auditors \\ 1917-18. \end{array} \right.$

DAVID HENDERSON,†
Chartered Accountant.

February 4th, 1918.

* Co-opted in the place of Lieut.-Col. E. F. Harrison, C.M.G., who was prevented by his duties from acting as Hon. Auditor.

† Mr. David Henderson was appointed in the place of Mr. G. Cecil Jones, who resigned from his office as an Hon. Auditor.

STATEMENT OF ASSETS AND LIABILITIES, Dec. 31st, 1917.

Note.—In addition to the above assets there is the Leasehold Property at 30 Russell Square.

THE INSTITUTE OF CHEMISTRY

Founded, 1877.

STATEMENT OF RECEIPTS AND EXPENDITURE

	GENERA	L
1916.	RECEIPTS. £ s. d. £ s.	đ.
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OF GREAT BRITAIN AND IRELAND.

Incorporated by Royal Charter, 1885.

FOR THE YEAR ENDED DECEMBER 31st, 1917.

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27 10 0	Advertisements		17	8
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INSTITUTE OF CHEMISTRY BUILDING FUND.

STATEMENT OF RECEIPTS AND EXPENDITURE SINCE THE OPENING OF BUILDING FUND A/c, 1909—1917.

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Proceedings of the Council.

DECEMBER, 1917-JANUARY, 1918.

Portrait of Prof. Meldola. The portrait of Prof. Meldola, referred to in the Report of the Council, was unveiled by Sir James Dobbie, President of the Institute, at a Special Meeting of the Council held on December 18th, 1917. Mrs. Meldola, Lady Dobbie, Prof. and Mrs. Poulton, and a number of friends and past students of Prof. Meldola were also present.

The President said that Sir George Beilby had on the same afternoon unveiled another portrait of Prof. Meldola, by the same artist, at the Royal Society. He referred to the late Professor's interest in science generally as well as in that which he had chosen as his profession. It was fitting that such a memorial should find a place in the Council Room, especially in view of the valuable services rendered to the Institute by Prof. Meldola in connection with the new building during the last few years of his life. After alluding to the extraordinary range and varied character of Prof. Meldola's activities in teaching, in research and in public affairs, he paid a tribute to his personal qualities as a man, remarking on his strong character and influence, his appreciation of humour, his fine literary gift and powers of conversation.

Having unveiled the portrait, the President warmly praised the work. All would agree that the artist had achieved a remarkable success. He also expressed the hearty thanks of the Institute to those who had subscribed to the presentation, and to Prof. Poulton for having been the means whereby the Institute had become possessed of such a valuable memorial to its past President.

Prof. Poulton having replied, Mr. Gordon Salamon, Hon. Treasurer, also spoke in appreciation of the gift, and the President's remarks were warmly endorsed by Mr. A. J. Chapman, a former student of Prof. Meldola.



RAPHAEL MELDOLA (Photographed from the Painting by Solomon J. Solomon, R.A.)



Glass Research.—Since the publication of Part III., 1917, in August last, the following formulas have been presented by Sir Herbert Jackson:-

(XL.) 56. Opalescent glass suitable for arc lamp globes and other purposes. (XLI.) 57. Soda-lead glass suitable for the manufacture of electric light bulbs.

(XLII.) 58. Leadless and dense opal glass. (XLIII.) 59. Three lead opal glasses.

(XLIV.) 60. Opal glass of high quality containing zinc.

(XLV.) 61. Leadless glass for the manufacture of electric light bulbs. (XLVI.) 62. Soft soda glass suitable for vacuum vessels to contain Equid

Professional Organisation.—Having considered a Report of the General Purposes Committee on the proposals submitted by the Executive Committee of the proposed British Association, the Council issued the following report to the Fellows and Associates on January 31st:

- I. The Council of the Institute of Chemistry have considered the proposals submitted to them, on December 14th, 1917, by the Executive Committee of the proposed British Association of Chemists.
- II. The proposals were as follows:-
 - (A). That the Institute of Chemistry should become the sole registration authority for chemists—an authority bearing no relation whatever to the granting of the diplomas A.I.C. and F.I.C.—with a view to the Institute carrying out the objects of the proposed British Association of Chemists as outlined in the circular calling the meeting held at Manchester on November 10th, 1917. (See III., below.)
 - If the Institute cannot see its way to modify its constitution to carry out the first proposition, that it should adopt as a minimum qualification for A.I.C. the (a) and (b) qualifications (see IV., below) of the proposed British Association of Chemists and adopt the objects outlined in the circular convening the meeting held on November 10th, 1917;

Provided that after 1921 only persons qualified under (a) of the British Association of Chemists qualifications be eligible for A.I.C.

- (C). That Local Sections should be formed and that the Council should consist largely of representatives from such Sections.
- (D). That should the Institute decide on having a separate registration body,—the latter should be self-governed and should carry out the objects of the proposed British Association of Chemists.
- III. The objects referred to are (a) to (d) following:—
 - (a) To obtain power to act as sole registration authority for all Chemists.
 - (b) To have the word Chemist legally re-defined.
 - (c) To safeguard the public by obtaining legislation ensuring that certain prescribed chemical operations be under the direct control of a Chemist.
 - (d) To raise the profession of the Chemist to its proper position among the other learned Professions, so that it may attract the attention of a larger proportion of the best intellects, and thereby secure a supply of highly-trained Chemists adequate to the industrial needs of the country.
- IV. The qualifications (a) and (b) referred to (in II., above) are as follows:—
 - (a) Any person holding a University degree, with first or second class honours in chemistry, or its equivalent in the opinion of the Council;
 - (h) Any person who can show evidence satisfactory to the Council of having had a sufficient general and scientific education and of having practised pure and applied chemistry for not less than seven years, and who holds a responsible position. (This clause to apply only up to December 31st, 1921.)

- V. The Council find on consideration that the objects of the Association are practically included in the aims and objects of the Institute. They, therefore, deprecate the formation of another body of Chemists for carrying out those objects.
- VI. The Council do not deem it advisable to adopt proposal (A). (See II., above.)
- VII. The Council are prepared to submit to the Fellows and Associates of the Institute in Extraordinary General Meeting the following modifications of the regulations and constitution of the Institute with a view to meeting proposal B, so far as the Council deem it advisable to do so:—
 - I. That the Council modify the existing regulations of the Institute in order to include as many chemists as possible in the Membership (Associateship and Fellowship) of the Institute, so far as such a course is compatible with the provisions of the present Charter.
 - 2. That any Candidate who has complied with the following conditions be accepted as eligible to apply for admission to the Associateship of the Institute:—
 - (a) That he has attained the age of twenty-one years; and either

That he has obtained a degree with first or second class honours in Chemistry (or other degree or diploma recognised by the Council as equivalent) after a three years' systematic day course, and (i.) has taken a further year's training in Chemistry at a recognised University or College; or (ii.) has had two other years' approved experience * under a Fellow of the Institute, or in a laboratory or works approved by the Council; or

That he has obtained a degree with first or second class honours in Chemistry (or other

^{*} One year may be accepted by the Council as sufficient where the approved experience in a laboratory or works has been acquired subsequently to the prescribed training in a recognised University or College.

degree or diploma recognised by the Council as equivalent) after a four years' systematic day course;

Provided in every case that the Candidate has produced satisfactory evidence of training in Physics, Mathematics, and an optional subject.

(b) That until December 31st, 1921, Candidates of twenty-seven years of age and upwards who have complied with the conditions prescribed in qualification (b) (see IV., above) submitted by the representatives of the proposed British Association of Chemists should be accepted as eligible for admission as Associates of the Institute, provided that they have complied with the provisions of the Charter of the Institute with regard to general education, scientific training (in Chemistry, Physics and Mathematics) and the passing of class examinations held in connection with such training.

Note.—In considering applications under this clause the Council will expect Candidates to produce evidence of having been trained and occupied in a manner which in the opinion of the Council is equivalent to fulfilling the conditions required of Candidates admitted under (a).

- (c) That Candidates who have not complied with the conditions specified in (a) or (b) immediately above or with the regulations adopted as a temporary (War) measure, be required to comply with the regulations adopted by the Council in July, 1917.
- 3. That the standard of qualification for the Fellowship of the Institute should be maintained at a decidedly higher level than that for the Associateship.
- 4. That the list of Institutions recognised by the Council

for the training of Chemists should be reconsidered with a view to its further extension.

- 5. (a) That with regard to proposal C (see II., above), local branches of the Institute be formed in important centres where a Membership of not less than, say, forty can be assured.
 - (b) That the main objects of such branches should be to maintain the interest of the Members in the general welfare of their profession and to promote social intercourse.
- 6. That steps be taken to revise the present system for the election of the Council, in order to give the general body of Members greater freedom of nomination.

Ministry of Reconstruction.—A list of Commissions and Committees set up to deal with questions arising at the close of the war has been published by H.M. Stationery Office (Cd. 8916, 4d.).

It may be mentioned in this connection that the Institute has been approached by the Ministry of Labour, Employment Department, with regard to the conditions of entry or re-entry into the profession of Chemistry and the prospects of the profession after the war. Steps will be taken to facilitate the restoration of ex-officers in H.M. Forces (and professional men of like standing who have served in the Forces but have not received His Majesty's Commission) to suitable positions in civil life. The Ministry of Labour will be entrusted with the duty of finding suitable employment for such ex-officers as need assistance or advice in that respect, and the Officer in Charge of the Professional and Business Register of the Department is carrying out that work. The Ministry has been assured that the Institute will do all that is possible to assist in the matter.

Officers and Members of Council.—The Officers and Members of Council who retire at the Annual General Meeting on March 1st, 1918, under the provisions of Bye-law 30, are

as follows:—The President: Sir James Johnston Dobbie, LL.D., F.R.S.; Vice-Presidents: Martin Onslow Forster, D.Sc., F.R.S., and Otto Hehner; Members of Council: Horatio Ballantyne, Alexander Findlay, D.Sc., (the late) George Thomas Holloway, A.R.C.S., Arthur Edgar Leighton, Percy Andrew Ellis Richards, William Henry Roberts, M.Sc., Sir Robert Robertson, K.B.E., D.Sc., F.R.S., Francis Napier Sutton, and William Lincolne Sutton.

The Officers and Members of Council nominated for election in their stead are:—President: Sir Herbert Jackson, K.B.E., F.R.S.; Vice-Presidents:* Horatio Ballantyne, Sir James Johnston Dobbie, LL.D., F.R.S., and Sir Robert Robertson, K.B.E. D.Sc., F.R.S.; Members of Council: Edward Charles Cyril Baly, F.R.S., A. Chaston Chapman, John Thomas Dunn, D.Sc., John Henry Lester, M.Sc., William Macnab, George Henry Perry, M.B.E., B.Sc., A.R.C.S., Francis Martin Potter, M.B.E., B.Sc., A.R.C.S., Thomas Tyrer, and William Maurice Gathorne Young.

Certified Occupations.—The Schedule of Protected Occupations—M.M. 130 (Revised)—for men employed on Admiralty, War Office or Munitions Work, or in Railway Workshops, published on February 1st, rendered available for recruitment many chemists classified in Grade I. who had not attained the age of 23 by January 1st, 1917, as

follows:-

Ag	e Limit.
Professional Occupations, Administrative and Technical	
Staff: Chemist (Works, Analytical or Research)	23
Administrative and Technical Staff employed on Staff of	
Firms engaged in the Industries protected in the Schedule;	
the working Principal of a Firm, Managing Director,	
Works Manager, Assistant Works Manager, Head of	
Administrative Department, Technical Staff and Clerks	
possessing high Technical knowledge	25
Under Drugs:—	
Analytical Chemist† and Assistant Analytical Chemist†	23

^{*} In place of Sir Herbert Jackson, K.B.E., F.R.S., nominated for election as President.

[†] The protection applies to men engaged on contracts for public and private hospitals.

A	ge Limit.
Under Preparation of Sera and Vaccines:—	
Bacteriologists*	23
Skilled Bacteriological Laboratory Assistants*	26
Works Chemists*	23
Under Engineering Drawing Office Stationery Manufac-	
ture:—	
Chemist	32
Under Instrument Making: X-Ray Apparatus:	
Photographic Plate Maker (including Chemist)*	30

^{*} The protection applies to men engaged on contracts for public and private hospitals.

FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERVING OR WHO HAVE SERVED WITH H.M. FORCES.

(SUPPLEMENTARY LIST.)

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

FELLOW.

Coates, J. E., Lieut.-Commander, R.N.V.R.

ASSOCIATES.

Bailey, C. W., Lance-Corporal, Leicestershire Regiment.

Burr, A. H., R.E.

Cabell, H. F., R.E.

Callister, C. P., A.I.F.

Caunce, A. E., King's Liverpool Regiment.

Evans, L. W., Lieut. M.G. Corps.

Forsyth, W. C., R.E.

Geake, F. H., Captain R.E.

Hatton, A. B., Lieut. R.N.V.R., attached R.N.A.S.

Hawley, J. W., Lieut., Highland Light Infantry.

Hopkins, D. G., Corporal, R.E.

Macintyre, E. G., Sub-Lieut., R.N.V.R., attached R.N.A.S.

Marks, Lewis, Cadet, R.E.

Morris, Alfred, Lieut., A.O.D.

Newton, A. U., 2nd Lieut., Border Regiment.

Painter, G. M., Captain, Suffolk Regiment.

Rydings, E. P., Sub-Lieut., R.N.V.R.

Smith, F. W., Lieut., Bedfordshire Regiment.

Stone, H. G., O.T.C.

Valentine, A. H., Public Schools Battalion.

Walker, Eric, Captain, R.E.

Wearing, C. M., Corporal, R.E. (M.M.).

Woodhead, A. E., Captain, R.A.M.C.

STUDENTS.

Atkinson, C., Cadet, R.F.C.

Bakes, W. E., R.E.

Barber, H. H., R.N.A.S.

Bevan, A., 2nd Lieut., R.G.A.

Cunliffe, P. W., Flight Sub-Lieut., R.N.

Drummond, A. J., Lance-Corporal Highland Cyclist Battalien.

Ferrier, G. S., Area School of Gas Defence.

Gold, A. K., R.N.A.S.

Pickard, C. E., Gas Officer.

Pollard, A. G., Captain, R.E.

Print, H. C., Cadet.

Smith, D. G., R.N.A.S.

Whinfrey, C. G., Lieut., British Inspection Dept.

Wigfield, J. B. C., 2nd Lieut., R.E.

Williams, E. H., Queen's Westminster Rifles.

Since the publication of the List given in Proceedings, Part IV., 1917, entries have been altered in the following cases:—

FELLOWS.

Akers, N. C., Lieut., R.N.V.R.

Bainbridge, J. S., Captain and Adjutant, 4th Yorkshire Regiment.

Brown, B. M., Lieut., A.O.D.

Campbell, L. E., Lieut., A.O.D.

Price, T. S., Lieut-Commander, R.N.V.R.

Wade, F., Lieut., R.E. (T.).

ASSOCIATES.

Moore, G. W., 2nd Lieut., R.G.A. Somer, A. J., Sergeant, R.A.M.C.

STUDENTS.

Doidge, H. F., Major, A.S.C.

Gibbs, G. H., Lieut., R.G.A.

Hand, P. G. T., Sergeant, R.E.

Robertson, J. A., Captain, H.L.I.

Smith, A. M., Lance-Corporal, Gordon Highlanders.

Spicer, J. I., Captain, East Lancashire Regiment.

The Register.

Since the publication of Proceedings, Part IV., in November, 1917, the Council have elected 28 new Fellows and 118 new Associates; 3 Associates have been elected to the Fellowship, and 2 Students have been admitted.

The deaths of 2 Fellows and I Student have been reported.

New Fellows.

- Bentz, Ernest. 30, Manley Road, Manchester, S.W. [Owens Coll., Manchester, Chief Chemist, English Sewing Cotton Co., Ltd.]
- Clarke, Miss Resalind, B.A. (R.U.I.), D.Sc. (N.U.I.), Spire House, Galway. [Senior Assistant to Prefessor Senior, Univ. Coll., Galway. Research.]
- Coates, Lieut.-Commander Joseph Edward, M.Sc. (Birm.), 104, Albert Palace Mansions, Battersea Park, London, S.W. 11. [Lecturer on Physical Chemistry, Univ. of Birm.; R.N.V.R.; Research.]
- Collens, Archibald Edgar, The Government Laboratory, Antigua, B.W.I. [Govt. Analyst and Superintendent of Agriculture for the Leeward Islands.]
- Cottrell, Allin, B.Sc. (Manc.), The Beeches, Eastriggs, Dumfriesshire. [Head of Chem. Dept., Technical School, Dewsbury; Section Manager, H.M. Factory.]
- Deacen, Edgar Reginald, M.B.E., 36, Shooters Hill Gardens, Eltham, Lenden, S.E. 9. [Finsbury Tech. Coll.; Research, Woolwich Arsenal.]
- Edgar, Edward Charles, D.Sc. (Vict.), 42, Perham Road, West Kensington, London, W. 14. [Chemical Adviser, Safety of Factories, Ministry of Munitions.]
- Finn, Cornelius Philip, B.Sc. (Leeds), 32, Railway Terrace, Fitzwilliam, Wakefield. [Chemist, South Kirby, Featherstone and Hunsworth Collieries Co. Research.]
- Fryer, Percival John, Ravenscar, Tenbridge, Kent. [Chief Chemist, Yalding Manufacturing Co. Inventions and Publications.]
- Gibson, Professor Charles Stanley, M.A. (Cantab.), B.Sc. (Oxon.), M.Sc.Tech. (Manc.), Chemical Laboratory, University, Cambridge. [Professor of Chemistry, Maharajah's Coll., Trivandrum. War Service. Research.]

- Joshua, Walter Philip, Ph.D. (Zürich), B4, Staff Bungalow, Eastriggs. Dumfriesshire. [Chemist in Charge, Sulphuric Acid Laboratory, H.M. Factory.]
- Lambourne, Christopher, M.A. (Oxon.), 214, Cathedral Road, Cardiff.
 [Director, Production of Mineral Oil, M.M.]
- Lantsberry, Frederick Charles Alfred Hyatt, M.Sc. Tech. (Manc.), 63, Walford Road, Sparkbrook, Birmingham. [Chief Chemist, B.S.A. Translator of Francke's "Briquetting."]
- Leech, Benjamin, M.A. (Cantab.), Beech Knoll, Macclesfield. [Consulting Chemist. Patents.]
- Leonard, Alfred Godfrey Gordon, A.R.C.S.I., B.Sc. (Lond.), Ph.D. (Bonn), 18, Belgrave Road, Dublin. [Lecturer in Physical and Metallurgical Chemistry, Royal College of Science, Dublin. Research.]
- Morrell, Robert Selby, M.A. (Cantab.), Ph.D. (Würzburg), Tor Lodge, Tettenhall Wood, Wolverhampton. [Research Chemist and Works Manager, Messrs. Mander Bros. Research.]
- North, Barker, A.R.C.S., 33, Ashgrove, Bradford, Yorks. [Assist. Professor of Chemistry, Bradford Tech. Coll. Research.]
- Oldroyd, Rowland Ernest, Park Road, Rochdale. [Yorkshire Coll., Leeds. Head Chemist, Messrs. John Bright Bros. Patents. Pres., Dyers' Guild.]
- Rixon, Frederic William, M.Sc. (Vict.), Ph.D. (Giessen), 93, Cromwell Road, Bristol; and the University, Bristol. [Lecturer in Chemistry, University of Bristol.]
- Robinson, Charles Stanley, B.A. (Cantab.), H.M. Factory, Queensferry, nr. Chester. [S.; Manager, Acids Department.]
- Thomson, William Thomas, O.B.E., Stanton, Parkstone Road, Poole, Dorset. [Manager, H.M. Factory. Patents.]
- Threlfall, Sir Richard, M.A. (Cantab.), K.B.E., F.R.S., Oakhurst, Church Road, Edgbaston, Birmingham. [Director, Messrs. Albright and Wilson, Ltd.; Member, Advisory Council on Scientific and Industrial Research, and of Fuel Research Board.]
- Trotter, John, M.A., D.Sc. (Edin.), c/o Mactaggart, 12, Meadow Place, Edinburgh. [Research Chemist, Messrs. Chance and Hunt, Ltd.]
- Vanstone, Ernest, M.Sc. (Wales), D.Sc. (Birm.), H.M. Factory, Pembrey, Carmarthenshire. [Chief Chemist, H.M. Factory. Researches.]
- Verteuil, Joseph de, 116, Frederick Street, Port of Spain, Trinidad, B.W.I. [Actg. Assist. Director of Agriculture, Trinidad.]
- Watmough, Benjamin, Hatfeild Villa, Hatfeild Street, Wakefield, Yorks. [Yorkshire Coll., Leeds. Head Chemist, Ammonia and Ammoniam Carbonate Works, Messrs. Brotherton & Co., Ltd.]
- Weir, John, M.A., B.Sc. (St. Andrews), Ph.D. (Würzburg), Messrs. Nobel's Explosives Co., Ltd., Ardeer Factory, Stevenston, Ayrshire. [Assist. Manager, Research Section.]
- Wright, Walter Joseph, The Mall, Faversham, Kent. [Merchant Venturers Tech. Coll., Bristol; Technical Manager, Cotton Powder Co., Ltd.]

Associates Elected to the Fellowship.

King, George, M.Sc. (Birm.), 25, Whitmore Road, Small Heath, Birmingham; and co Messrs. Albright and Wilson, Ltd., Oldbury, Birmingham.

Orange, Lionel, B.Sc. (Lond.), 148, Barkworth Road, North Camberwell, London, S.E. 5.

Wilson, Major Lothian, B.Sc. (Lond.), 16, St. Margaret's Road, Plumstead-London, S.E.

New Associates.

Elected under the special provisions of the Regulations adopted by the Council, July, 1917.

S. = Naval, Military, or Air Service. M = Munitions.

I.I. = Passed the Intermediate Examination of the Institute.

Aldred, Harold, M.Sc. (Manc.), c/o Mrs. Tremlett, 3, Clare Avenue, Hoole, Chester. [M.]

Atkinson, Harford Montgomery, B.Sc. (Lond.), Ph.D. (Würzburg), John Milton House, 125, Bunhill Row, London, E.C. 1. [M.]

Bailey, Clement William, M.Sc. (Birm.), H.M. Factory, Langwith, Mansfield.

Bales, Sidney Hartley, M.Sc. (Leeds), 17, Broadway, Ealing, London, W. 5, [M.]

Barker, Matthew Felix, B.Sc., A.R.C.S. (Lond.), D.I.C., 44, Barclay Road, Walham Green, London, S.W. 6. [Govt. Lab.]

Beckinsale, Sydney, B.Sc. (Wales), 10, Wyndeliff Road, Charlton, London, S.E. 7. [M. Research.]

Beesley, Lieut. Richard Moore, M.Sc. (Shef.), M.C., Far Cross Bank, Kendal, Westmoreland. [S.]

Bickle, William Henry, B.Sc. (Lond.), E.I. du Pont de Nemours & Co., Carney's Point, N.J., U.S.A. [M.]

Bostock, Lieut. Bertram Ravenscroft, M.Sc. Tech. (Manc.), Winnington Mount, Northwich, Cheshire. [Research; S.]

Brimley, John Edmund, B.Sc. (Lond.), 3, Highlands Terrace, The Drive, Ilford, Essex. [Research.]

Brittain, Charles Edward, B.A. (Lond.), M.Sc. (Vict. and Leeds), The Grammar School, Normanton, Yorks. [Research.]

Broadhurst, Harold Marland, B.Sc. Tech. (Manc.), Ingleside, Glen Avenue, Blackley, Manchester. [Research.]

Brownson, Thomas Kerfoot, B.Sc. (Manc.), B.A. (Cantab.), 19, Priory Gardens, Highgate, London, N. 6. [M. Research.]

Burr, Alfred Hamilton, M.A., B.Sc. (Aberd.), c/o Mr. Waddingham, Cotton Mill, Langwith, nr. Mansfield, Notts. [S.; M.]

Byles, John Edward, M.Sc. (Manc.), The Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2. [Govt. Lab.]

- Cabell, Harold Frank, B.Sc. (Lond.), 66, Annan Road, Gretna Township, Scotland. [S.; M.]
- Callister, Cyril Percy, M.Sc. (Melbourne), H.M. Factory, Gretna, Scotland. [S.; M.]
- Casson, Simon, B.Sc. Tech. (Manc.), 188, Elizabeth Street, Hightown, Manchester. [Research.]
- Caunce, Albert Edward, M.Sc. (Liv.), 28, Pleasant Street, Morriston, Swansea. [S.; Research.]
- Chorley, Percy, M.Sc. (Manc.), High Cross, Kirkburton, nr. Huddersfield. [Research.]
- Clotworthy, Harold Reginald Septimus, M.A. (Dub.), A.R.C.S.I., B.Sc. (Lond.), H.M. Factory, Queensferry, Chester. [M. Research.]
- Colclough, Tom Peach, M.Sc. (Manc.), 174, Worksop Road, Handsworth, Sheffield. [Research.]
- Cooper, Christopher, M.Sc. (Dun.), Hawthorne, Caledonia Road, Saltcoats, Ayrshire. [M.]
- Corelli, Octavian Julius, Ph.D. (Zürich), Ty-Melyn, Aberthaw, Glamorgan.
 [Manager and Chief Chemist, Cement Works.]
- Cousen, Arnold, B.Sc. (Lond.), A.R.C.S., 27, Stokenchurch Street, Fulham, London, S.W. 6. [Govt. Lab.]
- Cousins, Francis George, B.Sc. (Lond.), D.C.M., 1, St. Cuthbert's Place, North Road, Durham. [S.; Teaching.]
- Crabtree, John Wallace, M.Sc. (Manc.), Guest House, Cranage Villas, Manchester Road, Lostock Gralam, Cheshire. [Process Manager, Ammonia Soda Co.]
- Cross, Samuel Moses, A.R.C.S.I., Kinnego, Killyman, Moy, Co. Tyrone, Ireland. [Research.]
- Davies, Thomas Eynon, B.Sc. (Wales), 25, Trevor Street, Aberdare, Glamorganshire. [M.]
- Dawson, Reginald David, B.Sc. (Aberd.), 65, Smithies Road, Plumstead, London, S.E. 18. [M.]
- Doran, William, B.Sc. (Liv.), 32, Rufford Road, Fairfield, Liverpool. [M.] Dougill, George, M.Sc. (Leeds), Royd House, Walkley Lane, Heckmondwike,
- Yorks. [Research.]
 Drummond, Alan Ashby, B.Sc. (Manc.), 1, Fairhaven Mansions, Lowther
 Hill, Forest Hill, London, S.E. 23. [M.]
- Elborne, Sydney Lipscombe, M.A. (Cantab.), 77, West Park, Eltham, Kent.
- Ellington, Oscar Charles, B.A. (Oxon.), 24, Humber Road, Blackheath, London, S.E. 3. [M.]
- Evans, Lieut. Lincoln Wycherley, B.Sc. (Wales), Overton-on-Dee, Ellesmere, Salop. [S.]
- Fallows, Leonard, B.A. (Cantab.), 34, Abbey Road, Warley, nr. Birmingham.
 [M.]

- Forster, Aquila, M.Sc. (Dun.), Ph.D. (Freiburg), 47, Chine, Grange Park, Winchmore Hill, London, N. [M. Research.]
- Forsyth, William Collins, M.A. (Edin.), B.Sc. (Glas.), 321, New City Road, Glasgow. [S.; M.]
- Gardner, Mrs. Gladys Emma Peake, B.Sc. (Lond.), 30, Albacore Crescent, Lewisham, London, S.E. 13. [M.]
- Garner, Frederic Horace, M.Sc. (Birm.), Wymeswold, nr. Loughborough.
- Geake, Captain Frank Henry, M.Sc. (Bris.), 147, Cromwell Road, Bristol. [S.]
- Genders, Reginald, B.Met. (Sheff.), 84, Wellington Road, Charlton, London, S.E. 7. [M. Research.]
- Goldstein, Wolfe, B.A. (Cantab.), B.Sc. (Lond.), The Nest, South Road, Portishead, Somerset. [Research.]
- Gesney, 2nd Lieut, Harold William, B.Sc. (Lond.), Fern Bank, 44, Addiscombe Road, Croydon, Surrey. [S.]
- Griffith, Robert Owen, M.Sc. (Liv.), 71, Park Road, Wallasey, Cheshire.
- Griffiths, Thomas Owen, B.Sc. (Lond.), 39, Lodge Road, West Bromwich.
- Hart'ey, Harold, M.Sc. (Manc.), Holmlea, Brook Road, Lymm, Cheshire. [Research.]
- Hatton, Lieut. Arthur Barker, B.Sc. (Manc.), D.I.C., 50, The Crescent, Leftwich, Northwich, Cheshire. [S.; Research.]
- Hawley, Lieut. John William, 67, Mill Hill, Musselburgh. [Heriot-Watt Coll., Edin.; Roy. Tech. Coll., Glasgow. S.]
- Hazel, Hubert Henry, B.A. (Cantab.), Caradoc, Balmoral Road, Parkstone, Dorset. [M.]
- Holt, Fred, M.Sc. (Manc.), 146, Greenway Road, Runcorn, Cheshire. [War Work.]
- Hopkins, David Graham, B.Sc., A.R.C.S. (Lond.), 43, Rhondda Street, Swansea. [S.; M.]
- Housley, Harold, M.Sc. (Manc.), Huntsville, 20, St. Andrews Road Huddersfield, Yorks. [Research.]
- Jepson, Clarence, B.Sc. (Manc.), 39, Green Walk, Crayford, Kent. [M Research.]
- Johnson, William Prescott, B.Sc. (Manc.), Parkfield, Kingswinford, nr. Dudley. [M. Research.]
- Jones, Richard Owen, B.Sc. (Wales), 57, Browning Avenue, Rock Ferry, Cheshire. [Research.]
- King, Charles Arthur, M.Sc. (Leeds), Norton House, Greenside, Worley, Leeds; and c/o The Farnley Iron Co., Ltd., Farnley, nr. Leeds. [Chief Chemist.]

- Lewis, Francis Charles, B.Sc. (Wales), Uwch-y-den, Elkington Road, Burry Port, Carmarthenshire. [M.]
- Lloyd, William Ellis, B.Sc. (Wales), Regent House, Penrhyndeudraeth, N. Wales. [M.]
- Lomax, Ernest Lawson, B.Sc. (Vict.), 87, Kensington Gardens Square London, W. 2. [War Work.]
- Lundholm, Gösta, 9, The Riggs, Eastriggs, Dumfriesshire. [I.I.; M.]
- Mackerill, John, M.Sc. (Manc.), 138, Greenway Road, Runcorn, Cheshire. [War Work.]
- Marks, Henry Percy, B.Sc. (Lond.), 3, Cranley Mansions, Muswell Hill, London, N. 10. [Govt. Lab.; S.]
- Marks, Cadet Lewis, A.C.G.I., Wimborne, Teignmouth Road, Cricklewood, London, N.W. 2. [S.]
- McArthur, Donald Neil, B.Sc. (Glas.), 28, Grafton Street, Glasgow. [Research.]
- McHutchinson, William, B.Sc. (Glas.), 108, City Road, Edgbaston, Birmingham. [M.]
- McInroy, John Naylor, M.A., B.Sc. (St. Andrews), Toorak, South Beach, Saltcoats, Ayrshire. [M.]
- Middleton, Arthur Beresford, A.R.S.M., A.M.S.T., H.M. Factory, Gretna.
- Midgley, James, M.Sc. (Leeds), 6, Claremont Road, Morecambe, Lancs. [M.] Mills, Laurence Harry, M.Sc. (Birm.), Pennant House, Rowley Regis, Birmingham. [M.]
- Mills, Leonard, B.Sc. Tech. (Manc.), 165, Leeds Road North, Huddersfield. [Dyes.]
- Milne, William Stephen, A6, Staff Quarters, Eastriggs, Dumfriesshire. [Aberdeen Univ.; M.]
- Moore, Harold, M.Sc. Tech. (Manc.), 7, Poplar Grove, Hazel Grove, Stockport. [War Work.]
- Morgan, Evan Dulais, B.Sc. (Wales), No. 1, Staff Quarters, Eastriggs, Dornoch, Dumfriesshire. [M.]
- Morgan, John Richard, B.Sc. (Wales), 8, Heath Cote Close, Ash Common, Surrey. [Research.]
- Morris, Lieut. Alfred, M.Sc. (Manc.), 51, Corder Road, Ipswich. [S.]
- Myers, James Eckersley, D.Sc. (Manc.), The Chemical Dept., The University, Manchester. [M.]
- Newton, Lieut. Arthur Ulysses, B.Sc. (Lond.), Coverdale, Farnborough Road, S. Farnborough, Hants. [S.; M.]
- Ogg, William Gammie, M.A., B.Sc. (Aberd.), H.M. Factory, Greetland, Halifax. [M.]
- Page, Hubert Ernest, B.Sc. (Lond.), 62, The Rand, Eastriggs, Dumfriesshire; and Shrewley, Warwickshire. [M.]

Painter, Captain George Macaulay, B.Sc. (Lond.), 24, Woodsome Road, London, N.W. 5. [S.]

Parkes, John Wilfrid, M.Sc. (Birm.), Merton House, Arklow, Co. Wicklow, Ireland. [M.]

Parkin, Arthur Francis, M.Sc. (Melbourne), H.M. Factory, Gretna. [M.] Parrish, John, B.Sc. Tech. (Manc.), 2, Cranage Villas, Lostock Gralam,

Cheshire. [M.]

Phillips, Henry Wilfrid Lewis, B.A. (Cantab.), 2, Balfour Crescent, Wolverhampton. [M.]

Polack, Wilfrid Gustav, M.Sc. (Liv.), B.Sc. (St. Andrews), Beacon House, Highlands Road, Runcorn, Cheshire. [War Work.]

Powell, Charles Wilfrid Roberts, Staff Quarters, Sarkbridge, Gretna, Scotland. [Univ. of Sydney; Research; M.]

Pullman, Arthur Donald Rieber, B.Sc. (Vict.), Seacroft, Cliff Drive, South-bourne, Hants. [S.; Met. Water Board.]

Ray, Robert, B.Sc. (St. Andrews and Cape of Good Hope), A4, Staff Quarters, Eastriggs, Dumfriesshire. [M.]

Riley, Albert, B.Sc. (Manc.), 4, Chamber Street, Lumb-in-Rossendale, Manchester. [M. Research.]

Roberts, Fred, B.Sc. (Wales), The Cosy, Buckley, nr. Chester. [M.]

Robinson, Eric, B.Sc. (Wales), Glan Aber, Farrar Road, Bangor, N. Wales. [Research.]

Robinson, Percy Lucock, B.Sc. (Dun.), 60, Earl's Dene, Low Fell, Gateshead. [M.; Admiralty.]

Roy, Charles Smart, Ph.D. (Jena), 4, Farnley Road, Chingford, London, E. 4. [War Work.]

Rydings, Eric Percy, B.Sc. (Lond.), 1, Grosvenor Terrace, Botanic Gardens, Glasgow. [S.; Admiralty.]

Scarborough, Harold Archibald, M.Sc. (Birm.), 32, Vicarage Road, Smethwick, Staffs. [M.]

Slater, William Kershaw, M.Sc. (Manc.), Eastdene, Chamber Road, Shaw, Lancs. [M.]

Smith. Frank James, B.Sc. (Liv.), 36, Bredale Road, Old Swan, Liverpool.
[M.]

Smith. Frederick William, B.Sc. (Lond.), 39, Ormonde Road, East Sheen, London, S.W. 14. [S.; M.]

Somer, Arthur Joseph, R.A.M. College, Millbank, London, S.W. 1. [1.1.; S.]

Stanier, Harold, B.A. (Cantab.), Ivy Cottage, Saverley Green, Blythe Bridge, Stoke-on-Trent. [Research.]

Steventon, Joseph William, B.Sc. (Wales), 25, Regent Street, Smethwick, Birmingham. [M.]

Stone, Horace Gilbert, B.Sc. (Lond.), H.M. Factory, Queensferry, Chester. [S.; M.]

- Taylor, Hubert, B.Sc. (Birm.), West Mount, Crosbie Road, Harborne, Birmingham. [M.]
- Thomas, Hugh Arwel, B.Sc. (Wales), 9, Church Circle, Farnborough, Hants. [Research.]
- Thomas, Richard, M.Sc. (Wales), Avonmore, Sefton Road, New Ferry, Cheshire. [Research.]
- Valentine, Abraham Henriques, M.Sc. (Vict.), 51, Poplar Road, Edgbaston, Birmingham. [S.]
- Wałker, Captain Eric, B.Sc. (Wales), Lynn, Blenheim Road, Bickley, Kent. [S.]
- Wallace, Thomas, M.Sc. (Dun.), The Castner-Kellner Alkali Co., Wallsend. [Research.]
- Wearing, Cyril Murray, B.Sc. (Birm.), Ashleigh, 62, Nicholls Street, West Bromwich, Staffs. [S.; M.]
- Weaver, William, B.Sc. (Manc.), 51, Poplar Road, Edgbaston, Birmingham.
 [M.]
- Whalley, George William, M.Sc. (Manc.), 22, Clare Avenue, Hoole, Chester.
- Wheatley, William, M.A. (Oxon.), 16, Rathbone Road, Warley Woods, Birmingham. [M. Research.]
- Whittaker, Croyden Meredith, B.Sc. (Vict.), 55, Cleveland Road, Huddersfield. [Dyes.]
- Wood, Charles Edmund, M.Sc. (Birm.), 83, Kingswood Road, Moseley, Birmingham. [M.]
- Woodhead, Captain Arthur Edmund, B.Sc. (Leeds), Bermerside, Cornwall Road, Harrogate. [S.; Research.]
- Worcester, Darcy, B.Sc. (Lond.), Caxton Villa, 8, Temple Road, Stowmarket. [M.]

New Students.

Greenfield, Geoffrey James, West Street, Storrington, Pulborough, Sussex. Toms, Harold, 35, Thorpe Road, East Ham, London, E. 6.

DEATHS.

Fellows.

Lieut. Herbert King, M.Sc. (Viet.) (killed in action). Reginald Cowdell Woodcock.

Student.

Lieut. John Holder Stearn, D.S.O. (killed in action).

General Notices.

Examinations.—Candidates who desire to present themselves for examination in July are requested to communicate with the Registrar.

Examinations in Biological Chemistry.—The Council will be prepared to arrange for an Examination in Biological Chemistry, Bacteriology, Fermentation, and Enzyme Action to be held in October, 1918.

Notice to Associates.—Associates elected prior to February, 1915, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, may obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in making known suitable appointments for professional chemists.

The Library.—The Library is open for the use of Fellows, Associates, and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. to 2 P.M.), except when Examinations are being held.

Chemical Publications.—The attention of the Council of the Institute has been directed to the formation of a Provisional Committee, consisting of representatives of academic, industrial and analytical chemists, to consider a scheme for publishing comprehensive bibliographies of Chemistry in the English language. A Trust Fund is being established to meet the cost.

Communications should be addressed to the Acting Secretary, Mr. F. W. Atack, M.Sc., F.I.C., 88, Claude Road, Chorltonville, Manchester.



THE

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

PROCEEDINGS.

1918.

PART II.

OFFICERS, COUNCIL AND COMMITTEES, 1918-19.
ANNUAL GENERAL MEETING, MARCH 1st, 1918.
PROCEEDINGS OF THE COUNCIL (FEBRUARY—MARCH, 1918).
THE LIBRARY.

OBITUARY.

MEMBERS AND STUDENTS WITH THE FORCES.

CHANGES IN THE REGISTER.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary.

30, Russell Square, London, W.C. 1. April, 1918.

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For the Year ending March 3rd, 1919.

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^{*} CHAIRMAN.

⁺ VICE-CHAIRMAN.

FORTIETH ANNUAL GENERAL MEETING.

FRIDAY, MARCH 1st, 1918.

THE Fortieth Annual General Meeting of the Institute of Chemistry of Great Britain and Ireland was held at 30, Russell Square, London, W.C., on Friday, March 1st, 1918, at 4.30 p.m.; Sir James J. Dobbie, President, in the Chair.

The minutes of the Thirty-ninth Annual General Meeting having been read and confirmed, Mr. A. Gordon Salamon, Honorary Treasurer, moved—"That the Financial Statements for the year 1917 be received and adopted, and that a vote of thanks be accorded to the Auditors for their services."

The Treasurer said that the affairs of the Institute, in spite of the times, were gradually but surely improving. The rather heavy loan of £5,500 which had been raised two years ago, for the conversion of the Institute's holding in Consols and to assist the Building Fund, had by the end of 1917 been reduced to £700. He anticipated that it would be still further reduced during 1918.

With regard to the Building Fund, it was felt that while so many other appeals demanded attention, the Institute must bear the burden, though it was hoped that the full amount of the cost of building and equipment

would be restored to the General Account in the future.

It would be satisfactory to the Fellows and Associates to learn that, although the Institute had not previously engaged professional assistance in connection with the audit, Mr. David Henderson, the Chartered Accountant who had assisted the Auditors this year, was not only able to confirm the accountacy of the accounts, but found little to criticise in the methods in force in the office of the Institute. The Institute was indebted to him and to the Honorary Auditors (Mr. Connah and Dr. Thorne), for their services and he (the Treasurer) asked the meeting to accord them a vote of thanks.

The question of professional assistance in the audit had been raised from time to time in the past, and in view of the growing bulk of accounts he

hoped that the arrangement would be confirmed.

The Treasurer also expressed his thanks to the Finance Committee for their loyal help, and assured the Fellows and Associates that they had given every care to the matters which had come before them.

The motion was seconded by Mr. Charles A. Hill and adopted nem. con.

Mr. F. G. Crosse and Mr. R. Brightman were appointed scrutineers to examine the voting papers for the election of Officers and Members of Council, and to report the result of the ballot for the election of Censors.

The President, referring to the election of Officers and Council, said that unfortunately, since the list of nominations was issued, one of the members nominated, namely, Mr. Thomas Tyrer, had died. The Institute's legal adviser had been consulted as to the position thereby created, and his advice was that, if the meeting approved, the thirty-five candidates who obtained the largest number of votes should be declared elected. This course was duly approved by the meeting.

Dr. L. T. Thorne, Mr. James Connah, and Mr. David Henderson, chartered accountant, were appointed Auditors for 1918 -19, and the fees for the services of Mr. Henderson were sanctioned.

The President moved "That the Report of Council for 1917–18 be received and adopted" (see p. 25).

Sir William A. Tilden, in seconding the motion proposed by the President, said that his mind naturally travelled back to the earliest days of the Institute, forty years ago—and he noted with satisfaction its steady progress. The President had put before the meeting the various considerations which had influenced the Council in its action with regard to recent elections to the Associateship and the Fellowship of the Institute, and he (Sir William Tilden) appealed with confidence to the younger members to support the Council on this question. The definition of the title "chemist" was a very difficult matter, and he felt that it could only be satisfactorily solved

by the education of public opinion. Although, owing to the war, the work of the chemist was brought into considerable prominence, the person usually referred to as "the man in the street" had scarcely any idea of the objects of the study of chemistry, of the methods and the processes employed, or the results obtained by the operations of the chemist; but he believed that in course of time the functions of chemistry and the occupation of the chemist would be better understood, and that then they would succeed in persuading their pharmaceutical friends to adopt a designation more appropriate to their calling than the word "chemist." That some pharmacists were also chemists was not to be denied: but their main business was the dispensing of medicines and the selling of poisons, which latter privilege was restricted to them by Act of Parliament. As to the British Association of Chemists. he could not help feeling some revival of that discontent which he had felt for many years with some of his most eminent scientific friends, who not only had stood away from the Institute but had taken opportunities of speaking slightingly of it. They had undoubtedly influenced younger men against joining the Institute. He felt strongly that it was incumbent upon every professor of chemistry and every chemist in practice to associate himself with the Institute. It must, however, be borne in mind that any movement of this kind must cover a wide range, and he had no doubt that the Council of the Institute would know just how to exercise a liberal spirit in any negotiations which might have to be conducted, either with the proposed new Association or with any other body. The important thing for the Institute and for the profession of chemistry in this country was that there should be unity, and that gradual endeavours should be made to make clear to the public the nature of the work of the chemist and the services which chemistry, and chemistry alone, could render to the country.

The motion, on being put to the meeting, was carried.

In accordance with the notice on the agenda Mr. J. H.

Lester moved: "That this meeting urge the Council (I) to require Associates admitted without Examination, before proceeding to the Fellowship, to pass an Examination in one of the branches of the Associateship Examination, unless they satisfy the Council under conditions (i.) and (ii.) of Clause I. of Section 6, on p. 32 of the Regulations, July, 1917, and (2) to delete condition (iii.) of Clause I. of Section 6, on p. 32 of the Regulations, July, 1917." After the remarks of the President in proposing the adoption of the Report of the Council, he (Mr. Lester) felt that there was scarcely anything left for him to say on the subject of the motion which evidently already had the support of the Council. He would only say that the object of the motion was entirely to support the policy which had been so well expressed by the President in his address.

Mr. William Marshall, in seconding the motion, said that he quite agreed with the remarks which Mr. Lester had just made. In Manchester they had certainly been a little alarmed at the action of the Council in admitting so large a number of Associates without examination, and there was a strong feeling among the younger members there that something should, if possible, be done to safeguard the standard of the Fellowship. It seemed clear now that as an examinational diploma the Associateship had gone (No! no!). At any rate the conditions summarised on page 2 of Part I. of the 1918 Proceedings showed so many ways of getting the Associateship without examination that he felt that that statement was justified. He should like to see the expressions "exceptional cases," "special circumstances," etc., removed from the Regulations, and he should also like to see a clear statement of the Council's policy in connection with the Fellowship. He felt that the Fellows themselves were largely responsible for what had happened, because when the Council put the matter before them they did nothing. However, it appeared that the Council approved of the principle of this resolution, and were in favour of making the Fellowship very much stronger, and he thought that if that conclusion were reached the views of the supporters of the resolution would be largely met.

Mr. W. G. Young said that, although he was entirely in sympathy with the motion, he could not agree that the Associateship as a professional qualification gained after examination was a thing of the past. While it certainly had been severely damaged, he thought that there were hopes of saving it. It seemed, however, now to be proposed to do another wrong, namely, to require an Associate to pass an examination in order to proceed to the Fellowship. In view of the fact that the Charter expressly declared otherwise, one of the newly admitted Associates, after three years of reputable work, could not be denied admission to the Fellowship. A refusal to admit him to the Fellowship would place the Council in a very difficult position. While, therefore, he was entirely in agreement with the object of the resolution, he feared that its attainment would not be practicable.

Prof. Donnan said that the Institute had come to the parting of the ways in regard to these matters, and would have to decide whether it should remain a very small select body of men who had passed certain tests—corresponding to the Royal College of Surgeons or the Royal College of Physicians—or whether it should endeavour to include the large and increasing number of chemists in the country who had graduated in the universities and higher technical schools. He felt that the Council had perhaps in this respect gone almost too far. The opinion in the universities of the north of England was that it was hardly feasible to persuade a man who had already taken a university degree, and perhaps had done one or two years' research or technical work, to spend a further year in passing the extra and severe test of the Institute examination. He thought that that difficulty would be very well met by the Council's suggestion that a man who had, say, taken a university degree with first or second class honours in chemistry, and who had spent, say, another three years in scientific research at his university or college or in analytical or consulting practice, or in technical work—showing that he

was a genuine chemist and meant to devote his life to the profession—might properly be admitted to the Associateship. Such men would in a very few years comprise 90 or 95 per cent. of the chemists of this country. At the same time he felt it to be just to the older body of the Fellows, and desirable for the maintenance of the prestige of the Institute, that, while every properly qualified man should be allowed to join the Institute, some special distinction should be given to the Fellowship, and as far as he could see this resolution was designed simply to urge or suggest that the Council should follow a path upon which they had already entered, and which seemed to be a very sensible one. The Associate in order to be elected a Fellow-just as, for example, an A.R.A. became an R.A.—must have attained some special distinction, such as the carrying out of original research or the devising of processes or inventions of sufficient merit. Mr. Lester and Mr. Marshall desired the deletion of Clause (iii.), but proposed that some room for elasticity should be left in the form of a higher distinction for the Fellowship. He felt that the time had arrived when the Institute, if it really wished to become, as it should, the registering body for all the chemists of the country, should adopt some such policy as that here indicated.

Mr. Lester thought that Mr. Young perhaps scarcely appreciated the fact that this motion referred only to Associates admitted without examination, and that conditions (i.) and (ii.) of Clause I. of Section 6 would still stand exactly as they are in the present Regulations.

Captain J. A. Foster asked whether those Associates who had already been admitted would automatically proceed to the Fellowship without examination.

The President said that an Associate must be admitted to the Fellowship under the Regulations in force when he was admitted to the Associateship. There could be no question of discriminating between one Associate and another, and anyone who had been admitted to the Associateship would be entitled to pass on to the Fellowship under the Regulations existing at the time of such admission.

Captain Foster said that under such circumstances, even if this motion were carried, it could not be acted upon without alteration of the Charter.

The President: That is to say, the Council could not act upon it as regards Associates already admitted?

Captain Foster: Yes.

The President: It might apply to Associates admitted hereafter.

Mr. E. W. Smith moved, and Mr. W. G. Young seconded, the following amendment: "That the question of raising the status of the Fellowship be left to the consideration of the Council and brought forward at the forthcoming extraordinary general meeting."

Mr. Lester said that he was quite prepared to accept that amendment, and asked permission to withdraw his motion.

The motion was then by leave withdrawn and the amendment accepted.

Mr. W. G. Young moved: "That the Council be urged not to confer the Associateship on any person who has not previously passed the Final Examination prescribed for this professional diploma by our Charter in Article 4, Clause 3, except (for the period of the present war) on Students of the Institute who have passed the Intermediate Examination or Accepted Candidates for the Final Examination, and only then on such as have served or are serving with H.M. Forces or are engaged on war work to the Council's satisfaction, and prevented thereby from taking the Final Examination."

The President had referred to the very large number of Associates who had been admitted under the Special Regulations, and had stated his opinion in regard to the causes of the ferment in the minds of many of the younger members of the Institute. He (Mr. Young), however, thought that in the majority of cases it was due to the fact that this valued professional qualification was now obtainable merely on payment of one guinea, and without any obligation to

pass an examination or take any trouble at all, and without the risk of incurring obloquy through failure to pass the examination. The admission or attraction to the Institute of the large number of excellently qualified men who still remained outside it was admittedly very desirable, but he wished to urge the Council to do this on constitutional lines, i.e., the lines laid down in the Charter. That was the only safe foundation upon which they could stand. The Charter might, and possibly after its thirty years of life did, require amendment. That would be a very proper subject for consideration, but until it had been considered and until some decision had been arrived at by the majority of the members of the Institute, the Charter should be adhered to. The Charter provided a means of admitting those qualified men who unfortunately were now outside the Institute, namely, admission to the Fellowship. The authority to act as an educational and an examining body conferred by the Charter was, it seemed to him, the raison d'être of the Institute, and to depart from that position would lessen the right of the Institute to exist. It seemed to him that there had been some confusion of thought in regard to the relative status of a university degree in science and the diploma of the Institute. The university degree was a certificate of academic progress, while the Institute's diploma was a professional qualification certifying a man's competency as a professional chemist, and he submitted that the Institute ought not to relinquish or delegate its duty, under the Charter, to examine. If the provisions of the Charter had been kept before the public and before the professors at all the universities, and particularly if they had been placed before parents who were about to send their sons to the universities to prepare to become professional chemists, it seemed to him that the regrettable attitude of certain professors towards the Institute would never have been taken up.

Captain Foster, in seconding the motion, said that he represented in regard to this question, the north-eastern section of England. From the list given in Part IV. of the

Proceedings for 1917 it would be seen that the Associates recently admitted without examination included a number who had no degrees and were merely doing munition work. When the 1916 circular was issued, very many of the members of the Institute did not reply to it, for the simple reason that they felt that the matter could be safely left to the Council. If the Council were elected properly, and were representative of the whole of the members, that would still hold good, and it was felt that the way to ensure that was to endeayour to get the Fellows and Associates to take more interest in the work of the Institute. To this end it was suggested that provincial sections should be formed. In the north-eastern district there was no special desire to form a new association, but there was a wish that the Institute should undertake the registration of chemists—whether by the creation of a new class of members or by other means was a matter for discussion. Mr. Young's present resolution was in accordance with the ideas of most of those in the north-eastern district.

Mr. G. A. Bracewell moved the following amendment: "That the Council be urged not to confer the Associateship on any person who has not previously passed the Final Examination prescribed for the professional diploma by the Charter in Article 4, Clause 3, except (for the period of the present war) on registered Students of the Institute who have passed the Intermediate Examination, and only then on such candidates as were registered prior to July, 1917, as serving or having served with H.M. Forces and prevented thereby from taking the Final Examination."

He thought that such a broad-minded view of the question as was suggested by the President and Sir William Tilden was actually taken by the majority of the members when they received the Council's circular stating that it was proposed to throw open the election of a certain number of Associates without examination; but it was thought that that was intended to apply only to men who were serving with H.M. Forces, whose title to be so elected was acknowledged without any question whatever. The list, however, in Part I. of the

1918 Proceedings, while including 29 men who were actually on service, included no fewer than 89 who were engaged in munition and research work, while of these 89 only one had passed the Intermediate Examination of the Institute. He should like to ask the Registrar how many of those 118 newly admitted Associates were on the register prior to July, 1917.

The Registrar said that of the 299 Associates elected under the Special Regulations, 88 were actually serving with H.M. Forces, 81 were previously registered Students of the Institute,

and 66 had been accepted for examination.

Mr. Bracewell, continuing, said that the Charter showed that the Institute was founded for the purpose of fostering and developing the profession of analytical and consulting chemistry, and there was a considerable gap between the academic course and the requirements of the analytical and consulting chemist and technological adviser—a gap which could not be filled by the university training. The fact that a man had taken the degree of B.Sc. or M.Sc. reflected great credit on him, but it by no means proved that he was a competent analytical chemist.

Mr. H. J. Bailey, in seconding the amendment, said that the Council would be alarmed if they knew, as he did, how many members of the Institute were beginning to imagine that the value of the Associateship of the Institute was more or less rapidly disappearing. In the early days of the Institute it was decided that an examining body for the profession was necessary, because the university diplomas did not appear to afford a sufficient guarantee for the purpose in view. A small loophole was, however, left by which in exceptional cases examination might be dispensed with. That appeared to be perfectly right as far as it went, but during the last three years the number of admissions without examination had amounted to 20 per cent. of the present membership—a figure which seemed alarmingly high to those who had had to "go through the mill." If it was desired to obtain the support of the whole of the chemists of the country, it would be better to do as was done in 1885, and issue a public and authoritative invitation to all qualified chemists to present themselves for admission to the Institute. That would ensure equal treatment for everyone, and could afford no ground for

complaint.

" outsiders."

Captain A. Gemmell spoke against the amendment and in favour of the original resolution, saying that there were many chemists who had perfectly good reasons for not being in the Army, but who might be well qualified for admission to the Institute. He had thought, however, that when this suggestion was put forward it was meant to apply to those who desired or had the intention, if there had been no war, of sitting for the Institute examination; but the number actually admitted without examination was roughly twice as many as would normally have presented themselves for examination. Even that would not have been objected to but for the feeling, born of personal knowledge of some of the cases, that the method of selection had not been altogether a good one. Although he came from the north he had not come into contact with any north-country members since the lists were published, but he knew that a large number of the younger members in the south were agreed in thinking that the Council should exercise greater discretion in granting the Associateship, and he thought that the only way to ensure such a result was to support a motion such as that which Mr. Young had put forward.

Mr. Herbert Porter said that he had been struck by the view taken in three or four recent instances by men who were not members of the Institute and had had no chance of becoming members in the past. They had taken the view that they would not like to enter the Institute without examination. That was a sufficient indication of the bona fides of these men, who had had from ten to twenty years' experience in analytical and manufacturing chemistry, and he thought that it threw considerable light on the attitude of those who might be termed

Mr. F. H. Lees said that the difference between the examinations of the Institute and university examinations was well

illustrated in the following passage from a presidential address by Prof. Frankland in 1907:—

Whilst the latter were contrived to test the amount of knowledge which a candidate had succeeded in bringing to a focus at a particular moment of time, the main object of the examinations of the Institute was to test what the candidate could actually perform when he was placed as nearly as possible under the same conditions as he would be in practice and within reach of a good chemical library. The candidate who did well in the one would not necessarily do so well in the other. It was a common experience for teachers to meet with students of excellent mental ability who readily acquired knowledge of theoretical chemistry, even in its more advanced and modern branches, who talked glibly about the phase rule, and perhaps could eite correctly author and year for the discovery of reactions in obscurechapters of organic chemistry, yet, when it came to the production of experimental results, were hopelessly outclassed by students of more modesttheoretical attainments; and whilst the latter met with remarkable success in their practical work, everything failed in the hands of those who moved with such facility in the theoretical part of the subject. The paper man might take an Honours Degree, but, should he present himself at the Institute, he might ignominiously come to grief, because he did not possess even the rudiments of that instinct which was necessary to the performance of practical chemical work, in spite of the application of higher mathematics to the interpretation of chemical phenomena. Before all things, the Institute's qualification was of a practical nature. The university graduate was more qualified to talk and to teach, but the overcrowding of his curriculum left him little time in which to practice and acquire technical skill, without which the Institute's qualification could not be attained. It was this practical character which was to be preserved in the Institute's examinations, so that the Fellows and Associates might be known for soundness of judgment and for capacity to perform chemical work upon which the public could place implicit reliance.

Since that time there had been a great change in the policy of the Institute, in the direction of parting with one of its most precious attributes, namely, the stamping of the hall-mark of competency by its own self-imposed examinations. Such a change involved, he thought, the loss of the sense of obligation to the Charter, while those Government Departments and public bodies who held the Institute's qualification in such high esteem could not fail to be unfavourably impressed. If a breach was made it inevitably widened. The Institute was menaced at the present time by two conspiracies. One was a conspiracy on the part of the professorial body, who at the conference in 1913 had expressed the fallacious view that the taking of the Institute examination by university

students would be an unnecessary overlapping—in spite of the fact that President after President had reiterated the difference between the Institute examinations and those of the universities. The second conspiracy was on the part of those unqualified men who desired to get the qualification, but who were not prepared to pass the examinations of the Institute. At the beginning of the war there was a great dearth of chemists, and a large number of unqualified men obtained positions in factories and now functioned temporarily as "chemists." They would have to take their true places after the war, but it appeared to be thought that they might be able to "dig themselves in" in this way, and he exhorted the members to oppose the present policy of the Council regarding the election of Associates, and to remember that the Institute was a professional body the qualification of which should be the hall-mark of professional competency.

Mr. A. J. Chapman supported the amendment because he felt that one of the faults of the Council had been failure to bring before the chemists of this country what the Institute itself had been doing. He regretted that Members of Council had not been able to attend the recent meeting at the Society of Arts, when the Institute was attacked by several speakers, and it was left to the Registrar to defend it single-handed.

Mr. W. Macnab said that, as one who had passed the examinations of the Institute, he rejoiced at the action the Council had taken in this matter, and he thought that the members need not fear that the Institute would suffer thereby. Some mistakes might possibly have been made, but he thought that on the whole the election of the new Associates was thoroughly justified. The times were exceptional, and he thought that if the Institute had adopted a wider policy earlier it would not have been in so much danger of being left behind. It was now going forward, and, while it was desirable that it should proceed cautiously, and while some of the criticisms that had just been made might be justified, and would doubtless be borne in mind by those in authority, he felt convinced that

the general body of members would agree that a wider policy must be followed. To look upon the Institute merely as an examining body would, he thought, at the present time be to make the mistake of their lives, and if that were really the meaning of the Charter it seemed high time that the Charter was altered. He hoped to see the Institute become the rallying point for the chemists of the country. Perhaps by modifying the present Regulations it might be possible to establish a further qualification that would be still more valuable than the existing one. He had the greatest pleasure in expressing his agreement with the general policy of the Council.

Dr. O. L. Brady said that the Institute must now decide whether it should be a qualifying body with objects similar to those of the Royal Colleges of Physicians and Surgeons, or whether it should cater for the whole of the qualified chemists of the country. In his opinion it could not do both; it must either cater for all duly qualified chemists with a recognised degree or diploma, or it must adhere to its present high standard of qualification and remain a very select body. He maintained that, in view of the fact that one-fifth of the members of the Institute had already been admitted without examination, it was now too late to keep up the attempt to make the Institute as exclusive as it had been: because the mischief (if it were mischief) had been done, and it seemed pretty certain that no resolution could be legally passed which would prevent the newly admitted Associates from proceeding to the Fellowship under the Regulations at present in force. The Institute's qualification had been held up as something far superior to any academical qualification, and in earlier days this was certainly the case; but at present, at any rate as regards organic chemistry and physical chemistry, the Institute examination was no more searching than many purely academic examinations. Except in regard to food and drugs and perhaps metallurgy, the Institute's examination for the Associateship was of very little higher value than that for a good first-class honours degree. Seeing that there were now in the Institute so many who were not specially qualified as technical chemists, and that it was now hopeless to think of altering that fact, he thought that the best policy would be for the Institute to give up any idea of its diploma being a specially high qualification, and rather to cater for all who were reasonably well qualified as chemists.

The President said that, while the discussion had been a most interesting and useful one, it was to be borne in mind that all these questions involved would come up again for consideration at the extraordinary general meeting which would be held in the near future, and at which there would be full opportunities for discussion. He did not know whether Mr. Young was anxious to persevere with the other resolutions standing in his name, or whether Mr. Bracewell was anxious to proceed with his amendment; but he thought that perhaps their purpose would be served if both the amendment and the resolution were withdrawn on the understanding that they would be covered by the matters to be submitted for discussion at the extraordinary general meeting.

Mr. Bracewell asked whether any cases now being considered would be postponed pending the decision of the extra-

ordinary general meeting.

The President said that it should be remembered that these matters rested with the Council, and while no doubt the Council would be unwise to take any action contrary to what was understood to be the general opinion of the Institute, they could not be bound by any action that the meeting could take on that occasion.

Mr. Bracewell asked whether the suggestion could not be conveyed to the Council from that meeting that it would be desirable that no further action should be taken until the extraordinary general meeting had been held. There was a desire among the country members that the matter should be decided by a postal vote.

Prof. Donnan remarked that the Council could not be bound except by a definite vote of the majority of the members

of the Institute.

Mr. Lees said that the object of Mr. Young's motion was presumably to prevent the Council from taking further action. A vote upon that would give formal expression to the feeling which existed, and probably the Council would not proceed in opposition thereto. He therefore pressed Mr. Young to persevere with his motion.

The President thought that the best course to take would probably be to vote on the amendment and bring the business

to a conclusion in the usual way.

The amendment was then put to the meeting and lost.

An amendment moved by Mr. George King, to the effect that the discussion on Mr. Young's resolution be postponed until the extraordinary general meeting, having been put to the meeting and lost,

Mr. Bailey moved the following amendment: "That this meeting requests the Council to reconsider the whole question of admission to the Associateship and Fellowship without examination, and to lay their proposals before the extra-

ordinary general meeting."

The President said that if Mr. Bailey meant his amendment to apply to the Special Regulations, it would if carried, amount to urging the Council in the meantime not to make any further elections under the Special Regulations. He would ask the Institute, however, to bear in mind that a number of the applications now under consideration were received at as early a date as some of those which had already been dealt with, and the position would be an extremely awkward one if the Council were precluded from dealing with those applications.

Mr. G. D. Elsdon seconded the amendment, which on being put to the meeting was lost.

Mr. Young said that he had for some time been wishing to withdraw his motion, but had been unable to obtain an opportunity of asking the President's permission to do so. Since, by the discussion which would take place on these matters at the forthcoming extraordinary general meeting, his object in giving notice of the motions standing in his name on the agenda would be attained, it now seemed unnecessary to proceed with them and he accordingly asked permission to withdraw them.

The motions were then by leave withdrawn.

Sir Robert Robertson said that it was usual to print the President's address, and, although Sir James Dobbie had described his remarks as merely "notes," he proposed to follow the usual course and ask Sir James's permission to print the Address. He did so for the reason that it would thus form a permanent record of the position of the Institute in the critical times through which it was passing, and especially of the view-point of the Council; and also because he thought that the promulgation of that view-point among all the members of the Institute would be of the greatest usefulness to them in the discussions which were to follow.

Mr. Lees seconded, and the motion was carried unanimously.

Prof. Donnan proposed a vote of thanks to the retiring Officers and Members of Council, referring specially to the services which Sir James Dobbie had rendered to the Institute during his term of office.

Dr. McGowan seconded.

Mr. Young, in supporting the motion, desired particularly that it might include the Registrar, the value of whose work in the interests of the Institute had been recently more than ever apparent.

The motion on being put to the meeting was carried unanimously.

The President, having received the report of the scrutineers, announced the election of Officers and Council (see p. 2), Dr. O. L. Brady being elected in the place of the late Mr. Thomas Tyrer.

Sir George Beilby, Sir James Dobbie, Dr. M. O. Forster and Prof. Percy F. Frankland were declared elected as Censors.

Sir James Dobbie then vacated the chair in favour of the newly-elected President, Sir Herbert Jackson.

Sir Herbert Jackson in thanking the Fellows and Associates for the honour they had conferred upon him, said that from the discussion which had just closed it might be considered that the future steering of the Institute would present a few difficulties: but he thought that they would be trivial. for the reason that the remarks of the various speakers indicated that they were all animated by the same ideals, by the same interests, and by the same loyalty to the profession to which they belonged; and, if all had that feeling and were determined to pull together, there would be no difficulty. Moreover, the time, although a difficult one, was also a very inspiring one. They had to continue the work so ably and so single-mindedly initiated and fostered by the retiring President, and he felt that in pursuing with determination the co-ordination of all the branches of the chemical profession they had little to fear for the future.

The proceedings then terminated.

The Address of the retiring President:

SIR JAMES J. DOBBIE, LL.D., D.Sc., F.R.S.

In moving the adoption of the Report of Council for 1917—18, the President said:—In view of the interest and importance of the business which we have before us this afternoon I think it will be convenient if I depart a little from the usual practice, and instead of delivering a formal address, make such remarks as I have to offer, in moving the adoption of the

Council's Report for the past year.

Referring to the Roll of the Institute; our losses by death in the course of the year have, I regret to say, again been unusually heavy. The list includes such well known names as those of John Cope Butterfield, mining, metallurgical and explosives chemist; Dr. John Kent Crow, sometime assistant to Sir Henry Roscoe, and an authority on the technology of paints and varnishes; Dr. William Scott Tebb; Prof. I. Hector Barnes, Agricultural Chemist to the Government of the Punjab; Dr. G. Christian Hoffman, formerly Assistant Director of the Geological Survey of Canada; Robert Barnabas Pollitt, explosives technologist; and Thomas Utrick Walton, Chemist-in-Chief of the Colonial Sugar Refining Company, whose work in connection with the applications of science to manufactures exercised a remarkable influence on the Australian Sugar Industry. One name on the list has a special interest for the chemists of my own generation that of Francis Sutton. No name was more familiar in the Laboratory than his when I was a student. Text-books of practical chemistry were not so common then as they are now, and amongst the few that were available none held a higher

place or was appealed to with more confidence as an authority of unimpeachable accuracy than Sutton's Volumetric Analysis. It remains to-day one of our standard works of reference. By the death of George Thomas Holloway, consulting chemist, metallurgist, and mineralogist, the Council have lost a highly valued colleague. In spite of physical weakness of long standing, Mr. Holloway accepted the position of Chairman of the Ontario Nickel Commission and was mainly responsible for the important report which was published shortly before his death. A letter from Mr. Gibson, Secretary of the Commission, to our Registrar, contains the following expression of the esteem in which he was held by the members of the Commission:—

"I need not say how much his colleagues in the Commission felt Mr. Holloway's death. He was a man of unusual attainments, and the courage with which he faced his tasks, despite a heavy physical handicap, was most admirable."

Another familiar figure in the chemical world has passed away within the last few days in the person of Thomas Tyrer, one of the most genial and large-hearted of men. Mr. Tyrer was a member of the first Council of the Institute and continued to the end of his life to be one of its staunchest friends and supporters. His interest in it was shown from time to time by the gift of books to the library and of pictures to adorn our walls. He was one of the mainstays of the Society of Chemical Industry and for many years its Hon. Treasurer. His services as a member of the Departmental Committee on Industrial Alcohol, and in other connections, will long be remembered with gratitude by all who are interested in the development of our chemical manufactures.

The usual activities of the Institute have been well maintained throughout the year. You have heard from the Hon. Treasurer the statement with regard to our finances and, I feel sure, appreciate the care which he and his Committee continue to devote to the money affairs of the Institute. The Public Appointments Committee have given attention to such

matters of professional interest as called for their consideration and intervention; the Proceedings Committee, in spite of the restrictions at present imposed upon them, have endeavoured to supply regularly an adequate account of the work of the Council and of other matters of interest to the members, and the House Committee, so far as funds at present allow, have provided further for the comfort and convenience of our rooms.

The recognition by the Crown of the public services of twenty-nine of our members is one of the most pleasing incidents of the year, and is significant of a gratifying change of attitude on the part of Government towards science. We congratulate the recipients most heartily on the honours which have been conferred upon them.

It has been customary for the President on vacating the Chair to review the work and progress of the Institute during his term of office and if you will allow me I should like to follow this example and refer very briefly to some of the more important features of the last three years.

Comparing the numbers on the roll in 1918 with those in 1915 it wil be seen that there has been an increase in the membership of 371, the total number of Fellows and Associates at the date of the Report being 1,848. The increase is largely in the class of Associates and is chiefly due to the operation of the Special Regulations passed by the Council last year to which I shall have occasion to refer more particularly later on.

As might be expected there has been a great falling off in the number of candidates for examination. During the period 1911—14 the number examined was 454, giving an annual average of 151; during the three years 1915—18 it was only 108, or on an average 36 each year; last year it had fallen to 19.

Our financial position has been generally improved. It is gratifying to be able to state that under existing conditions we continue to receive contributions towards our Building Fund which is still, however, in debt to a considerable amount to the General Account of the Institute. The loan from the Bank, which at one time stood at £5,500 has now been reduced to £700.

It was inevitable that some of our ordinary functions should suffer during the war, but on the other hand the past three years have afforded unusual opportunities for demonstrating the utility of the Institute and the special services which it has rendered in various directions have been widely acknowledged.

It has done very valuable work in introducing suitable candidates for Commissions in His Majesty's Forces where technical knowledge and experience were required and in providing chemists for Government factories, for controlled establishments and for laboratories engaged in war work. Every public department and every branch of the fighting services that requires the aid of the chemist has made use of it and in this connection the names of thousands of chemists of various grades have passed through our Registers. The Institute may fairly claim to have been the chief agent in mobilising the chemists of the country for war purposes.

Further, since the beginning of the war the Institute has been unremitting in its efforts to ensure to chemists a supply of pure reagents, glass, and porcelain. The value of the glass research work carried out under its auspices has been recognised on all hands and with the aid of the Department of Scientific and Industrial Research the investigations originally undertaken for purely chemical purposes have been extended for the benefit of nearly every branch of the glass industry.

But nothing has occupied so much of the time and attention of the Council or given rise to so much anxious discussion during the period under review as the Regulations relating to the admission of new members and the measures to be taken for the promotion of the better organisation of the Profession.

This brings me to that part of the Council's Report which relates to the subjects which are no doubt uppermost in the minds of members this afternoon. I refer to the sections on the Regulations for admission of new members and on Professional Organisation. These questions are all intimately connected, but it will be convenient to deal separately with the Special Regulations for the admission of candidates to the Associateship without examination during the war. Regulations in question were adopted by the Council as a purely temporary measure and as such have, I believe, the support of some of our members who would be opposed to the permanent retention of the exemptions they allow. It would be affectation to pretend ignorance of the fact that the proceedings of the Council in this connection have been the occasion of uneasiness, I might even say alarm, to some members who are concerned lest the high standard of qualification for the Institute should be thereby endangered. I am glad to have this opportunity of explaining the position. I feel sure that when you are fully informed of the reasons by which the Council were actuated in passing the Regulations and are aware of the caution with which they have administered them you will recognise, whether you approve of what has been done or not, that in this matter they have acted under a full sense of the responsibility which attaches to them as the custodians of the prestige of the Institute and of the interests of its members.

When the Regulations were adopted, the third year of the war had almost run its course. For nearly three years the work of our universities, colleges, and technical schools had been seriously deranged by the reduction of their staffs for war service, and in consequence the opportunities for scientific study had been everywhere curtailed. At the same time a demand for the services of chemists, unparalleled in the history of this country, had arisen and everyone who had just completed or was about to complete his training in chemistry and was not enrolled in the fighting ranks was quickly drafted into one of the technical units of the army or into one of the munition factories. Through the joint operation of these causes the number of applicants for permission to present themselves for our examinations rapidly fell off and whereas, as I have already mentioned, the average number of entries

for the three years preceding the war was 151, for the year 1917—18 the entries were only 19.

It was felt on all hands that the position of the men who had thus been deprived of the opportunity of obtaining the professional qualification to which they had been looking forward was one of great hardship and the desire to do something to alleviate the hardship was general.

In these circumstances the Council decided to follow the example of the universities and make arrangements for admitting to the Associateship without examination properly qualified candidates who were prevented by service in the Navy or Army or by other service of importance to the country from entering in the usual way. In the Special Regulations drawn up to give effect to this decision it was laid down that candidates claiming exemption from examination must either have passed the Intermediate Examination of the Institute, obtained a University degree, covering chemistry and physics, or fulfilled other conditions aftording a sufficient guarantee of the possession of a sound general and professional education. The Special Regulations provided, therefore, for the thorough training of all these candidates and I desire here to emphasise the fact that in every case in which a candidate has been admitted under these Regulations, the Council have had satisfactory evidence before them that this condition has been fully complied with. There has been no relaxation in that direction. There has been a relaxation in regard to the examinational tests of the Institute, but none in regard to the candidate's qualifications in so far as these are vouched for by the pursuit of the curriculum prescribed for the Associateship.

Now let us see what is the actual standing of the men admitted. Up to the date of the Council's Report their number was 299. Of these, 254 are University Graduates, of whom 80 took first or second class honours in Chemistry, and 77 others higher degrees, such as D.Sc. and M.Sc., implying research work. Of the remaining 45, who have not graduated, 22 possess diplomas recognised by the Council as equivalent to a university degree, 11 have passed the Inter-

mediate Examination of the Institute, and 12 have otherwise fulfilled the conditions laid down by the Council.

In addition to their academic qualifications nearly all the candidates had more than two, and none had less than one year's experience of some branch of practical work and all were certified by the heads of the departments to which they were attached as having performed that work satisfactorily. In many cases the certificates went far beyond this and bore testimony to work of exceptional value in the national cause.

I do not wish to make any comparison between the Associates who have been admitted under the Special Regulations and those who have been admitted by examination. I do not ask you to accept the university examinations in every or in any case as being equivalent to our own examinations as a test of a man's fitness for membership of the Institute. But I think it may fairly be claimed that the standing of these new Associates is such that in admitting them to our Register the Council have done nothing to lower the position of the Institute. The list is one of which any professional body might be proud and includes much of the most promising talent that has devoted itself to chemical science at the universities in recent years.

But I must not allow you to suppose that the mere production of formal evidence of the possession of the qualifications which I have described was regarded as a sufficient ground for admitting a candidate. Every case was inquired into by a large Committee which met week after week for the purpose, and the personal recommendations from members of the Institute which were received in support of the applications were carefully scrutinised. Whenever any note of doubt regarding the professional qualifications of a candidate or his eligibility on other grounds was detected, the case was rejected or consideration was adjourned until further information could be obtained. Of the 299 Associates admitted at the date of the Council's Report everyone was recommended by a unanimous vote of the Committee, and the recommendation

was in every instance unanimously endorsed by the Council. And here I ought to point out that the Council as at present constituted is representative of every branch of the profession and of every shade of opinion on the question of the mode of admission to the Associateship. Moreover, it is composed to a very large extent of members who themselves entered the Institute by examination and who are certainly not less jealous than the Council's critics of the reputation of the Institute as a professional body.

The main cause of the misgiving to which the action of the Council in this matter has given rise is to be found, I believe, in the largeness of the number of candidates who have been admitted under the Special Regulations. It is said that these Regulations were intended only for the relief of those who have been prevented by the war conditions from obtaining admission to the Institute in the usual way. That is so. But the assumption underlying much of the criticism, viz., that they were intended only for those who, prior to the war, had given some indication of their intention to seek admission to the Institute is not warranted by the facts. The words of the Regulation are:—

"That he has been prevented from taking the examinations for the Associateship by service in the Navy or Army or by other service of importance to the country during the war."

Under this provision it was open to any properly qualified chemist serving in the Forces or engaged in other work of national importance to come forward and say: I desire admission to the Institute but am prevented by the nature of my duties from taking the examinations and I ask to have my application considered. Except in those cases in which a candidate was a registered student of the Institute or had been accepted as eligible for the Intermediate or Final Examination, there was no possibility of distinguishing between those who had the intention of seeking admission to the Institute prior to the war and those who only conceived that intention recently. There was really no alternative but to

admit practically all claimants who fulfilled the conditions or allow the Regulations to become a dead letter.

It is admitted of course that the number of applicants has been greatly in excess of the number who would, in ordinary times, have sought admission to the Institute by exami-The explanation of this appears to me to be very Before the war chemists with a training which fitted simple. them for technical posts were in excess of the demand and many who desired but were unable to obtain such posts were forced to seek employment in other directions. Some became teachers, some drifted into other professions, some obtained appointments over-seas-it is a remarkable circumstance that at the beginning of the war one-seventh of the members of the Institute were abroad. But all this was changed in the year following the outbreak of war. The value to the country of every man possessed of a chemical training was soon recognised, and his services enlisted in the work of the nation. Men flocked back from abroad; schools were depleted of their teachers, and many who were on the point of abandoning chemistry found at last the opportunity which before had been denied to them. It is a matter for profound gratification and thankfulness that they were available in such numbers, and it is impossible to exaggerate the value of their work to the country in this crisis.

There was thus at once a large addition to the ranks of working chemists. Not only so, but for the first time large numbers found themselves thrown together at various centres throughout the country. Associating with one another they discovered that they had common interests and common aims and realised as they had never done before the need of combination. The agitation that followed for the further organisation of the profession had the effect of bringing the Institute prominently before their notice. In this way it has come about that the applic nts for admission to the Institute are more numerous than at any former period of its history. That the plea is genuine that they are prevented by the nature of the services they are rendering to the country from taking the

examinations for the Associateship in the usual way cannot be doubted. Anyone who is acquainted with the conditions under which they are working knows that they are such as to preclude the possibility of preparation for examination.

There is only one other point on which I wish to say a few words before I leave this subject. While there has been adverse criticism of the Council in connection with this matter it has usually been accompanied by a reservation in respect of the election of those who are actually serving with the Colours. Everyone—both those who are in favour and those who are opposed to the admission of Associates without examination—acknowledges that these men have a strong claim for generous treatment. Everyone is anxious to smooth the way for their return to civil life and to do whatever can be done to compensate them for the loss of some of the most valuable years of their life. That is a national obligation which we are all anxious to discharge. But we must endeavour to act consistently. Having made up our minds that in the extraordinary circumstances of the times it is expedient to relax the stringency of our Regulations in favour of those who are prevented by national service from taking our examinations, I know of no sound principle on which we can discriminate between one form of national service and another. I venture to think that the case of the men in the munition factories or similar employment is no less urgent than that of the soldier. Many of them were eager in the early days of the war to join the Colours and were denied the opportunity of doing so because they were considered to be indispensable at home. Would it be fair to place such men under any disability? It is true that they are working at their profession while the soldier is fighting, but their services are also essential to the country. At all events their position in relation to admission to the Institute is the same, seeing that they are prevented by their service from taking our examinations. I believe, therefore, that the Council could not have done otherwise than make the Special Regulations applicable also to their case.

Coming now to the larger question that is before us today, let me preface what I have to say on the subject by a reference to the present position of our ordinary Regulations for the admission of Associates. As you may remember, shortly before our last Annual Meeting certain proposals had been put forward by the Council for the amendment of the Regulations. These had their origin in a Conference held in 1913, under the presidency of my predecessor, Prof. Meldola, and were the outcome of patient and prolonged examination of the subject by several successive Councils. They provided for an additional year of study or, in lieu thereof, one or two years' practical experience, and for the simplification of the scheme of examinations. They also exempted first and second class honours graduates in chemistry altogether from examination. This last proposal met with a certain amount of opposition, in the face of which the Council decided not to proceed with it at that time, and it was settled that honours graduates should be required to take the practical part of the examination but should be exempt from the oral and written parts imposed on all other candidates.

It is important that you should know, however, that the number of members who expressed views opposed to the scheme of the Council issued in November, 1916, was less than 30, while 41, not including members of Council, were generally in favour of it, and 20 expressed the opinion that the matter should not be settled until after the war or were neither definitely in favour of nor opposed to the scheme. Thus less than 7 per cent. of the members answered the special circular addressed to all the members inviting their views. I think this may fairly be taken as an expression of the confidence of the general body in the Council in whom under the Charter the powers in such matters are vested.

I have thought it well to recapitulate briefly the history and provisions of these Regulations, which are those now in force, because it is important that you should have clearly before you the position as regards both the existing ordinary Regulations and the Special War Regulations. These were

adopted at the same time and circulated amongst members last August. They could not, therefore, as has been suggested, have been prompted or in any way influenced by the proposals for the formation of a British Association of Chemists which were not published until the end of October.

The movement for the formation of such an Association naturally excited great interest amongst our members. The number of chemical societies is already formidable and is the source. I believe, of much of the confusion that exists in the public mind, on the subject of the chemist's work. It was generally felt, therefore, that the creation of yet another body was to be strongly deprecated unless it could be shown that it was required for some purpose not already served by the existing societies. This feeling was greatly intensified when the programme of the proposed Association was published and it was seen that the objects aimed at were all such as were within the purview of the Institute. The registration of chemists: the definition of the title "chemist"; the safeguarding of the public by legislation ensuring that certain prescribed chemical operations shall be under the control of chemists; the improvement of the status of the profession, are all matters which at different times have received the earnest attention of the Council, and some of them were actually under consideration at the very time when the preliminary steps were being taken for the formation of the new Association. What was to be our attitude towards this movement? (learly it was not a movement to be ignored, especially in view of the fact that it had the sympathy and support of many of our own members. If we remained aloof it was certain that a new organisation would be brought into existence apparently to do the very things which the Institute was established to do, and there would be two bodies professing practically the same objects but acting independently and possibly at times in opposition. The Council decided, therefore, to send representatives to a meeting at Manchester called to consider the formation of the new body, with a view to ascertaining whether, and if so, under what conditions, the

Institute might co-operate in the movement, the main object of which we understood to be the better organisation of the profession of chemistry. At this meeting it was decided that before incorporating the Association a provisional committee should be appointed to approach the Council of the Institute for the purpose of explaining the objects of the Association and of advocating the view that these could best be attained by the Institute widening its scope.

It is unnecessary that I should recapitulate the subsequent history of events. The Report of the Council shows the point at which we have arrived and indicates with sufficient clearness the course which it is now proposed to pursue. I need only add that our meetings with the representatives of the promoters of the proposed Association have been of the most cordial description and that every effort has been made by both sides to arrive at a solution satisfactory to all concerned.

Put broadly, what the promoters of the Association aim at is the formation of a register which shall include the names of the trained chemists of every branch of the profession. This register, I presume, would serve as the basis of an organisation through which when occasion demanded, the chemists of the country could bring their whole weight and influence to bear on questions of professional or national interest. For these purposes it is held that the Institute is not at present sufficiently representative of the profession as a whole, and that the touch between the general body of chemists and the Council is less intimate than it should be. To meet these views it is obvious that a modification of our ordinary Regulations to allow of the admission of all chemists of a certain standing without examination would be necessary. It would also be necessary to establish local sections of the Institute and to alter the present method of election to the Council.

In considering how far it is possible to go in the direction of meeting the first of these requirements, we have to bear in mind the limitations imposed upon us by our Charter as to the meaning which we must attach to the term "chemist" in connection with the admission of Associates and Fellows, and unless we alter our Charter we must keep within those limits. The nature and extent of the training prescribed for Associates make it clear that the chemist of the Charter is a person who possesses a competent knowledge of the facts and principles of the science as a whole and a practical knowledge of the ordinary operations of chemistry which he is able to apply in any particular direction. That being so we are not entitled to admit as Associates those whose technical training—apart from the question of general education---has been restricted to some special branch or some special application of chemistry, or to some limited series of chemical operations, no matter how important in themselves. We all know men who are adepts, for example, in certain branches of mineral or metal analysis, but whose knowledge of chemistry extends no further than is necessary for that work. Such men are skilful craftsmen: nothing more. They have no claim to rank with those who have laid a broad foundation of general scientific and chemical knowledge, and it is clear. I think, that we cannot admit them to the Associateship of the Institute. To do so we should require not merely to alter our Charter but to abandon the primary object for which the Institute was established. But there is no reason that I can see why the Institute should not act as the Registration Authority for all those who are engaged in any branch of chemistry and thus fulfil one of the main functions proposed for the new Association. What the precise relation of those registered, other than as Associates and Fellows, should be to the Institute I need not now discuss.

Another point for consideration is the method of ascertaining the qualifications of candidates. The promoters of the Association ask as a permanent arrangement that all First and Second Class Honours Graduates in Chemistry of universities approved by the Council should be admitted to the Institute without further examination, and that temporary provision should be made for the admission, also without examination, of others who are deemed to be properly qualified. This is a matter which it is within the competence of the Institute to settle in whatever manner it thinks fit. The

Institute is primarily a certifying body and so long as it is satisfied as to the sufficiency of the examinations of other bodies it may accept their results. As to the expediency of doing so there is, however, much difference of opinion amongst our members and the question will have to be threshed out in a general meeting. I will only draw attention now to one point in this connection. The proposal relates to the Associateship. Probably many of those who fear that its adoption might result in lowering the standards of the Institute would feel their difficulty to a large extent removed if the conditions of promotion to the Fellowship were made more stringent. This is a policy which I may say has the warm support of the present Council.

If the questions connected with the mode of admission to the Institute can be satisfactorily arranged there will be little difficulty, I believe, in arriving at an understanding with regard to the various items in the programme of the British Association of Chemists. There is already a strong feeling within the Institute in favour of local sections and of a modification of the present method of electing the Council. Apart from their social advantages local sections would afford a means of ascertaining the views of members on matters regarding which it is important that the Council should obtain an indication of the feeling of the Institute as a whole.

With regard to the legal definition of the term "chemist" you will have seen in our Proceedings an account of a Conference with representatives of the Pharmaceutical Society, and will have learned something of the obstacles which have to be overcome. I do not intend to enter into this question on the present occasion, but I should like to say that the President of the Pharmaceutical Society has helped us greatly by making the present position clear. At any rate we know now exactly where we stand.

Having focussed as far as possible the points for discussion and ascertained what alterations in our Regulations would have to be made to arrive at an agreement with the promoters of the British Association of Chemists, the Council have decided to convene an extraordinary General Meeting at which the whole question will be brought before you for consideration.

My object this afternoon has been to place before you as clearly as possible the issues which have to be met and settled, not to advocate any particular policy. I earnestly hope, however, that some arrangement may be reached which will remove all justification for the formation of a new association. But this end can only be attained by compromise, especially on the question of the mode of admission to the Institute. I confess to much sympathy with those who, having passed through our examinations, feel aggrieved that others should be admitted without examination. The feeling is very natural. "Why." they ask, "should not everyone who desires admission to the Institute take the Institute's examinations? And why should we trouble about those who decline? If they will not come in on the usual terms let them stay away. So much the worse for them." Unfortunately that is what has happened in the past. They have stayed away. We must face the fact that large numbers of highly trained chemists decline to present themselves for our examinations. If you ask them why, they will probably answer that they have spent several years in the study of chemistry at the university and have graduated with honours in the subject; that they consider their university standing a sufficient guarantee of their attainments and see no necessity for any other qualification or for submitting themselves to any further tests. If you put it to them that it is their duty to associate themselves with the body which is specially charged with the maintenance of professional interests, they will probably agree, but will ask why it is that you throw difficulties in their way. That is their point of view, and if you wish them to co-operate with you it cannot be ignored. If the men I have in view were men of slight qualifications there would be no occasion to trouble about them. But the fact is that the qualifications of many of them are quite up to the level of those which we demand of candidates for the Associateship. Hitherto

they have had no organisation for professional purposes, but now they desire to become associated with a representative professional body, and if they are incorporated in the Institute they will add enormously to its strength and influence. I hope that by the adoption of a wise and generous policy this union, so essential to the best interests of the profession, may soon be brought about.

But I put my plea on higher than professional grounds. When the war is over only the most perfect organisation of all our scientific resources will enable us to maintain our position in the industries and in commerce in face of the fierce competition with which we are certain to be assailed.

A great opportunity will be given us of serving the country, but a great responsibility will rest upon us which we as an Institute can only adequately discharge if we are able to speak with a voice which represents all that is highest in professional talent and attainment in the country.

In laying down the office which I have held for the last three years, I desire to express to all the members with whom my duties as President have brought me into contact, my deep sense of the courtesy and consideration with which I have invariably been treated. My acknowledgments are especially due to the Hon. Treasurer, the Vice-Presidents, and Members of Council for the loyal support which they have accorded me on all occasions. The greatest harmony and good feeling have characterised our proceedings and have made my task as Chairman not only easy, but delightful. Of our Secretary and Registrar I find it difficult to speak in terms which will not appear exaggerated to those who have not had the opportunities that I have had of observing the enthusiasm and the self-sacrificing spirit with which he devotes himself to the interests of the Institute. Our work during the past three years has often been carried on under considerable difficulties. But we have been able to hold our meetings regularly and the attendances at the Council and Committees have been as good as in normal times, notwithstanding the fact that many of the members have heavy additional duties thrown upon them at

the present time. For my own part I shall consider myself fully rewarded for any sacrifices of time I have been called upon to make, if on looking back on my term of office I can feel that it has been productive of advantage to the interests which we are banded together to serve.

Although the scrutineers have not yet finished their task I think I may safely anticipate their report in one particular and congratulate you on having secured Sir Herbert Jackson as your next President. Sir Herbert has been one of the most zealous Members of Council during my tenure of office and has taken the keenest interest in every branch of the Institute's work. A distinguished teacher of chemistry, his advice has been of great assistance to us in the discussions relating to our Regulations, and it is fortunate that we shall have the benefit of his wide experience in dealing with the difficult and delicate problems in this connection which now await solution. Of his great services to the country in connection with glass research it is unnecessary that I should speak here, but I should like to take this opportunity of acknowledging the generous spirit in which he has always insisted on due recognition being made of the share of the Institute's Committee in this work. I wish him success in the task he has undertaken and the Institute a career of increased prosperity and usefulness under his Presidency.

I beg now to move formally that the Report of the Council be received and adopted.

Proceedings of the Council.

FEBRUARY-MARCH, 1918.

Appointment of Committees.—The Council elected on March 1st held their first meeting on March 9th and appointed the Standing and Special Committees with their respective Chairmen (pp. 4—6).

Patents and Designs Bill.—The Council have had their attention directed to the Patents and Designs Bill, 1917, and have appointed a Special Committee to consider the attitude of the Institute towards it.

Public Appointments.—The authorities of the University College of North Wales, Bangor, have replied to the letter addressed to them by the Council in June, 1917, with reference to the proposal to establish a Public Health Laboratory in connection with the College (see Proceedings, Part III., 1917, pp. 8—11).

The authorities of the College indicate that the question of protecting the interests of analysts at present employed by the county councils concerned is a matter outside the province of the College, and it would be for the county councils to consider under what conditions the existing arrangements should be altered.

With reference to the apprehension entertained by the Council of the Institute that the proposal to undertake "miscellaneous analyses" might lead to interference with general practice of private practitioners in chemistry, it is suggested that this item of the scheme should be read in connection with the portion of the scheme which deals with

Sources of Samples, and provides that they will include "such persons or bodies as may be authorised from time to time." The authorities of the College consider that these words afford a sufficient guarantee against the danger apprehended by the Council of the Institute.

The Public Appointments Committee will watch future proceedings in connection with this matter in the interests of the chemists concerned.

Chemical Publications.—In Proceedings, Part I., it was announced that a Provisional Committee had been formed to consider a scheme for publishing comprehensive bibliographies of chemistry in English, and that a trust fund was being established to meet the cost.

The Committee approached the Council of the Chemical Society on the matter, who resolved that the preparation of general works of reference, similar to Beilstein and Landolt Börnstein, in the English language, should be under the direction of the Society in association with cognate scientific and industrial societies, and convened a conference held on March 14th, whereat the resolution referred to was confirmed.

It may be mentioned that the meetings of the Provisional Committee have been held at the Institute, and the Council of the Institute have signified their willingness to do what they can to assist in the project.

Appointment of Examiners.—The Council have reappointed the Board of Examiners for the year ending. March 3rd, 1919.

Gift.—Miss E. C. Stoddart has very kindly presented to the Institute, in memory of her brother, the late Frederick Wallis Stoddart, a handsome mahogany bureau, which has been placed in the Council Room.

Building Fund.—Among the contributions recently received may be mentioned £50 from Miss E. C. Stoddart, and a second donation of £50 from Mr. Frank Wood, F.I.C.

The Library.

Since the issue of the Proceedings for 1917, Part II., the Committee have had much pleasure in acknowledging the following gifts:—

COMMONWEALTH BUREAU OF CENSUS AND STATISTICS, Melbourne: The Official Year-Book of Australia.

MESSRS. CONSTABLE & Co., LTD.:

What Industry Owes to Chemical Science. Richard B. Pilcher and F. Butler-Jones, B.A., A.I.C. London, 1918.

DUNN, J. T., D.Sc., F.I.C.:

A number of volumes of the Memoirs and Journal of the Iron and Steel Institute; Reports of the British Association for the Advancement of Science; and volumes of the Chemical Trade Journal.

KINGZETT, C. T., F.I.C.:

Chemistry for Beginners. C. T. Kingzett, F.I.C. London, 1917.

MESSRS. LONGMANS, GREEN & Co.:

Cellulose: An Outline of the Chemistry of the Structural Elements of Plants. Cross & Bevan. New Impression, with Supplement. London, 1918.

MARSHALL, ARTHUR, F.I.C.:

Explosives. 2 Volumes. Arthur Marshall, A.C.G.I., F.I.C. London, 1917.

A Short Account of Explosives. Arthur Marshall, A.C.G.I., F.I.C. London, 1917.

OPTICAL MUNITIONS, GLASSWARE AND POTASH PRODUCTION DEPT. :

British Resources of Sand and Rocks used in Glass Manufacture. P. G. H. Boswell, D.Sc., A.R.C.S. London, 1917.

ROYAL ONTARIO NICKEL COMMISSION:

Report of the Royal Ontario Nickel Commission. Toronto, 1917. (2 copies).

SANDERSON, JOHN, F.I.C.:

A number of English and American Scientific Journals.

SIMMONS, W. H., B.Sc., F.I.C.:

Handbook of Soap Manufacture. W. H. Simmons, B.Sc., and H. A. Appleton. London, 1908.

Edible Fats and Oils. W. H. Simmons, B.Sc., and C. A. Mitchell. London, 1911.

Textile Soaps and Oils. J. H. Hurst and W. H. Simmons, B.Sc. London, 1914.

Soap. W. H. Simmons, B.Sc. London.

Books Purchased.

Food Inspection and Analysis. A. E. Leach. New York, 1913. Industrial Chemistry: Organic. Geoffrey Martin, Ph.D., M.Sc., F.I.C. London, 1913.

Treatise on Quantitative Inorganic Analysis. Vol. I. J. W. Mellor, D.Sc. London, 1913.

Text-Book of Physics: Properties of Matter. J. H. Poynting, Sc.D., F.R.S., and J. J. Thomson, M.A., Sc.D., F.R.S. London, 1907.

Annual Reports of the Society of Chemical Industry on the Progress of Applied Chemistry, Vol. I. London, 1917.

Journals, etc., Wanted.

The Library Committee will be greatly obliged by gifts of

The Elbrary Committee will be greatly obliged by girls of	
any of the following, which are needed to complete sets:—	
Publication.	Wanted.
The Analyst	Vols. 3 and 4.
The Chemical News	Vol. 28; many numbers of Vols. 29 and 30
The Chemical Trade Journal	No. 610.
Chemiker-Zeitung	Vols. 1—17, inclusive.
A	The first four series, and Vols. 1—5
Chemisches Zentralblatt	
G : B 1	inclusive, of the 5th series.
Comptes Rendus	From commencement to 1877 inclusive, and 1894 onwards.
Journal of the Board of	and 1001 onwards.
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Part 9 of Val 9 to April 1005 inclusive
Agriculture	Part 2 of Vol. 2 to April, 1905, inclusive.
Journal of the Institute of	1000 /NT C T 135 13 1000
Brewing	(Nos. for January and March); 1899 (Nos. for February and December).
Journal of the Royal Society	
of Arts	Many early volumes and parts before
01 22100	1886.
Metallurgical and Chemical	1000.
Engineering	Vols. 1-4 of the Metallographist, in-
Engineering	clusive.
Nature	Vols. 35, 36, 44 and 62, inclusive.
Proceedings of the Royal	
Society	Vols. 1—12 (1862), and Vol. 25 (1876) onwards.
Zeitschrift für angewandte	0.2.17 (4.2.00)
(1)	From commencement to 1898; and 1901.
Chemie	From commencement to 1898; and 1901.

The Library Committee look to the Fellows and Associates for the continuance of their generous support.

Obituary.

Sub-Lieut. Montague Samuel. Baker was killed in action in France on July 29th, 1917, in his thirtieth year. He received his general education at King's College School, Wimbledon, and his scientific training at King's College, London. On leaving College he acted for a short time as assistant to-Mr. W. D. Borland, and then to Mr. C. H. Cribb, later becoming a temporary assistant at the Government Laboratory. In 1913 he proceeded to the post of assistant chemist to Messrs. Doulton & Co., where he remained until the outbreak of war, when he joined the Royal Naval Division as a seaman. He served in Gallipoli and for a few months assisted Col. W. H. Willox in scientific work in that campaign. At the time of his death he held a commission as Sub-Lieutenant in the Royal Naval Reserve. He qualified as an Associate of the Institute in 1910 and was elected a Fellow in 1914.

2ND LIEUT. GEORGE MACLELLAN CARRUTHERS was killed in action on August 10th, 1917, in his twenty-seventh year. Born at Rutherglen and educated at Hutchison's Grammar School, he received his scientific training at the Royal Technical College, Glasgow. After three years' experience in research under Dr. David Spence with the B. F. Goodrich Rubber Co., Akron, Ohio, he was appointed Chief Chemist in the laboratory of the Dunlop Tire and Rubber Goods Co., of Toronto, Canada, which position he held until the outbreak of war, when he resigned and came home to enlist in the Gordon Highlanders. After training, he was offered and accepted a commission in the Lancashire Fusiliers. He was killed while his Company were establishing a position after having taken a strong point and captured prisoners. He passed the Final Examination for the Associateship of the Institute in 1912, and was elected a Fellow in 1915.

JOHN JOSEPH EASTICK died in London on September 7th, 1917, in his sixty-third year. Born at Great Yarmouth, he received his scientific training at Owens College, Manchester, and the Royal School of Mines, obtaining the diploma A.R.S.M. in 1878. In 1879 he was lecturer on chemistry at Whitgift Grammar School, Croydon; in 1880 he became chemist to Messrs. Hodges & Sons' Refinery, London, and in the following year was appointed chemist to Messrs. Abram Lyle & Sons, sugar refiners, with whom he introduced methods of making brewers' saccharine, invert sugars and golden syrup. In 1890 he proceeded to Melbourne, where he built and managed for four years the Australasian Sugar Refinery and acted as honorary adviser on beet cultivation and sugar manufacture to the Victoria Government. In 1895 he improved and rearranged the juice mills of Messrs.

Cran and Tooth, at Bundaberg, Queensland, and from that year until 1905 continued to devote his attention to the sugar industry in the Commonwealth, becoming director and chairman of the Bundaberg Distillery and general manager, for the Queensland National Bank, of several refineries, raw sugarmills, juice mills and plantations. In 1906 he returned to England and engaged in consulting work, taking over, on the death of his father-in-law, Benjamin E. R. Newlands, the practice of Messrs. Newlands Bros. in the city of London. He was elected a Fellow of the Institute in 1887.

2ND LIEUT. WILLIAM VIVAISH EASTMAN, a Registered Student, was killed in action on October 4th, 1917, in his twentieth year. He received his general education at Squires Lane School and Christ's College, Finchley, afterwards proceeding to Finsbury Technical College. At the time of his death he was serving as a 2nd Lieutenant in the King's Royal Rifle Corps.

ALFRED FAIRFAX died at East Ham, on February 3rd, at the age of sixty-two years. Trained at King's College and Finsbury Technical College, London, he subsequently became assistant Manager to Messrs. Mark, Finch & Co., of Silvertown, where he remained for five years, afterwards taking an appointment with Messrs. Spencer Chapman and Co., of Silvertown, and then with the Western Counties Co-operative Association, at Plymouth. In 1895 he obtained an appointment under the East Ham Corporation, but although he ceased to practise chemistry he maintained his interest in the science and his connection with the Institute. He was elected a Fellow in 1888.

WILLIAM JERVIS EYRE FOAKES died in London, in December, 1917. He was educated at King's College, London, and obtained an appointment at Messrs. Henley's Telegraph Works at Woolwich. He was afterwards associated in practice with Auguste Dupré, Chemical Adviser on Explosives to the Home Office, and, in 1898, was appointed Chief Government Inspector of Explosives to Cape Colony, a post which he held for nearly fourteen years. He was elected a Fellow of the Institute in 1912.

LIEUT. KENNETH GORDON GARNETT, M.C., a Registered Student, died on August 21st, 1917, of wounds received in France in August, 1916. He was educated at St. Paul's School and received his scientific training at Trinity College, Cambridge. On the outbreak of war he joined the crew of the Zarepha, and in January, 1915, entered the R.F.A. He was wounded in March, 1915, but returned to the Front in the following October until August, 1916, when he received a wound in the spine, from the results of which he died nearly a year later. Shortly before he died he was awarded the Military Cross and also received the Croix de Guerre from the French Government.

JOSEPH JOHN GEAKE died on September 24th, 1917, at the age of twenty-seven. Born at Guildford, he received his early education at the Royal Grammar School, where he gained a Scholarship, proceeding to Finsbury Technical College for his scientific training. He subsequently became an assistant in the Chemical Laboratory of the Royal Veterinary College, London. He passed the Final Examination and was elected to the Associateship of the Institute in January, 1916.

DR. GILBERT PROUT GIRDWOOD died at Montreal, on October 2nd, 1917, in his eighty-fifth year. He was born in London and received his training

in chemistry and medicine at University College and St. George's Hospital Medical School. After qualifying as M.R.C.S. in 1854, he was for a short time House Surgeon in the Liverpool Infirmary and then gazetted as assistant surgeon in the Grenadier Guards. In 1862 (at the time of the Trent affair), he accompanied the 1st battalion of his regiment to Canada, but when it returned to England in 1864, he decided to resign from the Army and to practise in Montreal, though later he was for some years a surgeon with the 3rd Victorian Rifles, served with that regiment during the Fenian troubles, and was afterwards promoted a Staff Medical Officer of the Canadian Militia. 1865 he took the degrees of M.D., C.M., at McGill University, and in 1869 was appointed lecturer in chemistry in the faculty of medicine of the same University. In 1872 he became Professor of Practical Chemistry, and in 1879 succeeded Dr. Craik as Professor of Chemistry, holding that chair until 1902, when he retired with the title of Emeritus Professor. He also held several medical appointments, including that of chief medical officer of the Canadian Pacific Railway. His name is associated with the Rogers and Girdwood method for the detection of strychnine, and he collaborated with Dr. Sterry Hunt in the production of green chromium oxide used in the preparation of ink for printing bank notes. He was an Original Fellow of the Royal Society of Canada, a Past-President of the Röntgen Society of America, Vice-President of the Canadian Branch of the Society of Chemical Industry, and a prominent member of other scientific societies in the Dominion. He was elected a Fellow of the Institute in 1888, served as an Honorary Corresponding Secretary of the Institute (1909-1911), and was always active in promoting the interests of professional chemistry in the Dominion.

LIEUT. RICHARD HOFMEYR, a Registered Student, died of wounds on September 11th, 1917, in his twenty-sixth year. Born in Cape Colony, he received his general education at Woodstock, S. Africa, and afterwards entered the Royal Technical College, Glasgow, for his scientific training. At the time of his death he held a Commission in the King's Own Yorkshire Light Infantry and was attached to the Royal Flying Corps.

GEORGE THOMAS HOLLOWAY died at Limehouse, on October 24th, 1917, in his fifty-fifth year. He was born at Battersea and trained under Edward Frankland, at the Royal School of Mines, where he was for two years (1884—1886) Assistant Demonstrator in Chemistry. He then practised as a metallurgical and mineral chemist, at first in Chancery He was Chairman Lane, London, and later at Limehouse, London. of the London Section of the Society of Chemical Industry (1912-1913), and served on the Councils of the Society of Public Analysts and the Institution of Mining and Metallurgy. He assisted Sir Boverton Redwood in the preparation of the first edition of Petroleum, and contributed many papers to technical journals. In 1915 he was appointed Chairman of the Ontario Nickel Commission, whose report, for which he was largely responsible, is regarded as the most comprehensive work on the subject. He was elected a Fellow of the Institute in 1888, was Examiner in Metallurgy from 1911-1915, and a Member of Council at the time of his death.

ROBERT GORDON KIND, a Registered Student, died from gas poisoning, on May 3rd, 1917, in his twenty-ninth year, while serving with the R.A.M.C. in France. He received his general education at Liscard High School and Oak is Institute, Walton, and was for two and a quarter years in the labora-

tory of Messrs. Cammell, Laird & Co., afterwards proceeding to Liverpeol University for his scientific training.

LIEUT. HERBERT KING was killed in Belgium, on October 7th, 1917, in his forty-second year. He received his scientific training at the Yorkshire College—now the University—Leeds, where he took the degree of B.Sc. in 1895. In 1897 he became Science Master at Dronfield Grammar School, and later occupied similar positions at Ashville College, Harrogate, and Wolverhampton Grammar School; then became Lecturer at the Municipal Technical School, Scarborough, and in 1909, Head of the Chemistry Department of the Cockburn High School and Technical School, Leeds. He was also Public Analyst for the Borough of Scarborough. At the time of his death he was serving as a Lieutenant in the Army Ordnance Department. He qualified as an Associate of the Institute in 1897, and was elected a Fellow in 1900.

EDMUND ALBERT LETTS died as the result of a cycling accident in the Isle of Wight, on February 19th, 1918, in his sixty-sixth year. Educated at King's College, London, and in Vienna and Berlin, he became, in 1872. Chief Assistant in the Chemical Department at Edinburgh University; in 1876, at the age of twenty-four, he was appointed Professor of Chemistry at University ('ollege, Bristol, and three years later succeeded Thomas Andrews at Queen's College-now Queen's University-Belfast, where he remained until his retirement, through ill-health, early in 1917. He published researches on phosphines and on the accurate determination of carbon dioxide in water and air. He was an authority on questions connected with the pollution of rivers, estuaries, and tidal waters. In collaboration with Dr. W. E. Adeney he made a survey of estuaries of the British coasts in order to supply the Royal Commission on Sewage Disposal with data regarding standards for tidal waters in relation to offensive putrefaction and injury to fish. He was elected a Fellow of the Institute in 1901, and served as a Vice-President from 1904-1907.

LIEUT. CYRLL JOHN NIXON, a Registered Student, died—from the results of an accident—on October 18th, 1917, at the Military Hospital, Tidworth, in his twenty-first year. Educated at Luton Modern School, he subsequently entered Finsbury Technical College. At the time of his death he held a Commission in the Bedfordshire Regiment, and was attached to the Royal Flying Corps.

LIEUT. ARNOTT ANDREW PATTERSON, a Registered Student, died early in 1917, in his twenty-sixth year. Born at Evesham, he received his early education at Hull Grammar School, and later entered the Royal Technical College, Glasgow. He also worked for some time under Mr. William Rintoul, at Messrs. Nobel's Explosives Factory. He was gazetted a Lieutenant in the Border Regiment, later becoming attached to the Royal Flying Corps, and died from wounds received in action.

LIEUT. JOHN HOLDER STEARN, D.S.O., a Registered Student, was killed in action on December 3rd, 1917, in his twenty-fourth year. He received his general education at Hertford Grammar School, and entered King's College, London, for his scientific training. He held a commission in the Durham Light Infantry.

WILLIAM HENRY SYMONS died at Bath, on August 26th, 1917, in his sixty-fourth year. Born at Barnstaple, he received his scientific training in the School of the Pharmaceutical Society and at University College, London. He was for some years in private practice at Hampstead, and some time analyst to Messrs. Idris & Co., Ltd. He subsequently studied medicine, taking the degree of M.D. at Brussels University, and later was appointed Medical Officer of Health for the city of Bath. He contributed many papers on chemical and pharmaceutical subjects to the Pharmaceutical Journal, and after adopting the medical profession gave special attention to the prevention of the dissemination of disease by dipterous and other insects. He was elected a Fellow of the Institute in 1888.

THOMAS TYRER, an Original Fellow and member of the first Council of the Institute, who died at Hampstead, on February 21st, 1918, in his seventy-fifth year, was born at Wolverhampton and educated at his father's school in that town, where he became apprenticed at the age of fifteen to a local chemical manufacturer. At seventeen he entered the Royal College of Chemistry and worked under Hofmann. He also studied physics under Tyndall and biology under Huxley. In 1862 he became a works chemist with Messrs. May and Baker at Battersea, of which firm he was subsequently a partner. In 1890 he took over the business of Messrs. Dunn & Co., Strat ford, under the style of Messrs. Thomas Tyrer & Co., in which he was managing director when it became a limited liability company in 1898. He was one of the founders, in 1881, of the Society of Chemical Industry, of which, for ten years, he was Honorary Secretary, and later Chairman, of the London Section (1890-1902), President (1896-1897), Treasurer from 1908 until his death. In 1910 he was awarded the medal of the Society for his distinguished services to chemical industry. He was also Chairman of the Chemical Trade Section of the London Chamber of Commerce devoted to the interests of the export drug trade of the Mother Country and the overseas Dominions. He was a prominent Member of the Departmental Committee on Industrial Alcohol, a Past President of the British Pharmaceutical Conference (1907), a Member of the Executive Council of the National Physical Laboratory and of the Council of the Association of British Chemical Manufacturers. The Institute was represented at his funeral by Mr. F. Napier Sutton and Mr. Edmund White, Members of Council.

John Williams died at Demerara, on July 11th, 1917, in his fortyeighth year. His early training in science was received at Queen's College, British Guiana, under Professor Francis, to whom he subsequently became Lecture Assistant. In 1890 he was appointed private assistant to Professor J. B. Harrison, C.M.G., in the Government Laboratory, Demeraa; in 1893 Assistant Analyst, and in 1905 Analyst-in-Charge of Agriculture and General Analyses, which post he held at the time of his death. He was elected a Fellow of the Institute in June, 1917.

REGINALD COWDELL WOODCOCK died at Wanstead, on January 5th, 1918, at the age of sixty-six years. Educated at King's College School, he received his scientific training at the Royal College of Chemistry, and was for a time private assistant to Edward Frankland. In 1872 he became chemist to the Bede Chemical Co. at Jarrow-on-Tyne, and, fifteen months later, Assistant Professor of Chemistry at the Royal Agricultural College,

Cirencester. From 1878 to 1886 he was associated in analytical practice with C. W. Wigner, and during the last thirty years was engaged with the Sanitas Co., for twenty years in New York and the last ten in London. He was Hon. Treasurer of the New York Section of the Society of Chemical Industry from its inception until 1906. Jointly with Mr. C. T. Kingzett, he contributed papers to the Journal of the Society on the production of formic and acetic acids by the atmospheric oxidation of turpentine. He was elected a Fellow of the Institute in 1878.

FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERVING OR WHO HAVE SERVED WITH H.M. FORCES.

(SUPPLEMENTARY LIST.)

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

ASSOCIATES.

Albinson, John, R.E. Eastburn, W. J. S., Cadet, Officer Cadet Battalion. Evans, D. T., Corporal R.E. Evans, H. G., 2nd Lieut. O.T.C. Glendinning, W. G., Corporal R.E. Guest, P. H., Lieut. A.O.D. Hickson, B., Lieut. Yorkshire Regiment. Howell, O. R., Lieut. and Q.M. London Regiment. Howells, O. R., London Regiment. Llewellyn, B., Lieut. A.O.D. Lewis, J. S., 2nd Lieut. South Wales Borderers. Marks, Lewis, 2nd Lieut. R. E. Marples, M. E., Lieut. A.S.C. Middleton, H., Petty Officer R.N.A.S. Morris, I. P., Captain R.E. Park, Robert, Captain R.A.M.C. Pelling, A. J., Captain R.E., D.S.O., M.C. Pemberton, E. S., 2nd Lieut. I.W. & D., R.E. Pickard, H., Captain Cheshire Regiment. Stocks, H. H., Corporal R.E. Vickers, William, Sergeant R.E. Weyman, G., Lieut. General Reserve of Officers. Willson, F. G., 2nd Lieut. (Ministry of Munitions).

STUDENTS.

Hemmings, W. G., Cadet, Inns of Court O.T.C. Sawell, John, 2nd Lieut. R.F.C.

Since the publication of the List given in Proceedings, Part I., 1918, entries have been altered in the following cases:—

FELLOWS.

Lang, W. R., Colonel, General Staff, Canadian Expeditionary Force. Nuttall, W. H., Lieut. A.O.D. Smith, A. R., Lieut. A.O.D.

ASSOCIATES.

Gale, R. C., Lieut. R.G.A.
Shipston, Captain, Officer Cadet Battalion.
Wilson, D. M., Captain R. E., M.C., Croix de Guerre, Chevalier de l'Ordre de la Couronne.

STUDENTS.

Collen, F. D., Major Notts and Derby Regiment, M.C. Mackenzie, P., Captain R.E.
Miller, C. J., R.E.
Needs, F. E., Lieut. R.F.A.
Norman, D. J., 2nd Lieut. R.E.
Senior, A., Captain R.F.A.
Steele, A. R., Captain, Scottish Rifles.
Ward, E. C., Captain A.S.C.

The Register.

Since the publication of Proceedings, Part I., in February, 1918, the Council have elected 12 new Fellows and 81 new Associates; 6 Associates have been elected to the Fellowship, and 16 Students have been admitted.

The deaths of 10 Fellows and 2 Students have been reported.

New Fellows.

- Armstrong, Edward Frankland, D.Sc. (Lond.), Ph.D. (Berlin), F.C.G.I., Greenbank, Latchford, Warrington. (Managing Director, Messrs. J. Crosfield & Sons, Messrs. W. Gossage & Sons, and the Erasmic Co.)
- Best, Thomas Thompson, Ph.D. (Erlangen), Woodleigh, Laurel Road, St. Helens, Lancs. (Chief Chemist and Manager of the Hardshaw Brook Works of the United Alkali Co. Inventions.)
- Brislee, Francis Joseph, D.Sc. (Liv.), Holmfield, Church Road, Roby, Lancs. (Chief Chemist, the British Insulator and Helsby Cables. Ltd. Research.)
- Campbell, Arthur Fred, M.Sc. (Manc.), 9, Fort Road, Sedgley Park, Prestwich, Manchester. (Research Chemist, Messrs. Hardman and Holden, Ltd.)
- Dunstan, Albert Ernest, D.Sc. (Lond.), East Ham Technical College; and Meádhurst, Sunbury-on-Thames. (Head of Chemistry Department, East Ham Technical College. Chief Research Chemist, Anglo-Persian Oil Co.)
- Macbeth, Alexander Killen, M.A., D.Sc. (Q.U.B.). 3, Victoria Terrace, Cregagh, Belfast, Ireland. (Acting-Professor of Chemistry, Queen's University, Belfast. Publications and Researches).
- Mills, William Sloan, M.A., D.Sc. (R.U.I.), Messrs. Levinstein, Ltd., Ellesmere Port, nr. Chester. (Research and Works Chemist. Messrs. Levinstein, Ltd..
- Passmore, Francis William, Ph.D. (Würzburg), 81, Queen Victoria Street, London, E.C. 4. (Analytical and Consulting Chemist. Research.)
- Radeliffe, Lionel Guy, M.Sc.Tech. (Manc.), 929, Chester Road, Stretford, Manchester. (Demonstrator, College of Technology, Manchester. Research and Publications).
- Sinnatt, Captain Frank Sturdy, M.Sc.Tech. (Manc.), 321, Great Clowes Street, Higher Broughton, Manchester. (Lecturer on Fuels, University of Manchester. Commanding Manchester University O.T.C. Served for some time with Special Brigade, R.E. Research.)

- Steele, Professor Bertram Dillon, D.Sc. (Melbourne), H.M. Factory, Ellesmere Port, Cheshire. (Professor of Chemistry, University of Brisbane. Superintendent, H.M. Factory, Ellesmere Port. Research and Publications.)
- Young, Horace John, Overdene, Ashfield Grove, Whitley Bay. (Chief Chemist, North-Eastern Marine Engineering Co.)

Associates Elected to the Fellowship.

Duncan, John Gibson, 67, Waverley Gardens, Crossmyloof, Glasgow.

Hay, James Gordon, 70, Rainsford Road, Chelmsford.

Millin, David, B.A. (Cape of Good Hope), P.O. Box 809, Johannesburg, Transvaal, S. Africa.

Snelgrove, Frederick Walter, B.Sc. (Lond.), 40, Park Road, Dartford, Kent. Tait, John William, M.A., B.Sc. (Edin.), c/o Mrs. Hutton, Collate, Barassie Street, Troon, Ayr.

White, Lieut, Francis David, 37, Hamilton Terrace, Partick, Glasgow.

New Associates.

Elected under the special provisions of the Regulations adopted by the Council, July, 1917.

S. = Naval, Military, or Air Service. M = Munitions.

I.I. = Passed the Intermediate Examination of the Institute.

Albinson, John, B.Sc. (Viet.), "Q" Coy., R.E., B.E.F. [S.]

Amies, Edwin John, B.Sc. (Lond.), A.R.C.S., Wainholm, The Links, Pembrey, S. Wales. [M. Research.]

Barnes, Arthur Chapman, B.Sc. (Manc.), Government Laboratory, Nairobi British East Africa. [Previously exempted I.I.; S.]

Bearn, Joseph Gauld, M.Sc. (Manc.), Technical Staff Mess, Royal Aircraft Factory, S. Farnborough, Hants. [M. Research.]

Blair, Ethelbert William, B.Sc. (Lond.), D.I.C., Newington, Parkstone Avenue, Parkstone, Dorset. [M. Research.]

Boyd, William John, B.Sc. (Glas.), 73, Manse Street, Saltcoats, Ayrshire.
[M.]

Bride, Cyril, B.A. (Oxon.), B.Sc. (Lond.), 86, Ridgeway, Edgbaston, Birmingham. [M.]

Brittain, Arthur, M.Sc. (Liv.), Plas Coch, Newbridge, Ruabon. [M. Research.]

Browning, Henry, junr., B.Sc. (Manc.), H.M. Factory, Ellesmere Port, Cheshire. [M. Research.]

Bryant, Charles Sidney, B.A. (Oxon.), B.Sc. (Lond.), 57a, Crookston Road, London, S.E. 9. [M. Research.]

Butler, Raymond Renard, B.Sc. (Lond.), 73, Mount Park Road, Ealing, London, W. 5. [Govt. Lab.]

- Callow, Raphael Heber, M.Sc.(Liv.), 85, Devon Road, Warley, Birmingham.
 [M. Research.]
- Cauwood, John Douglas, M.Sc. (Sheff.), 40, Hampton Road, Pitsmoor, Sheffield. [Govt. Lab.; Glass Research.]
- Chadwick, Samuel, M.Sc. (Manc.), c.o. G.P.O., Birmingham. [M.]
- Choate, Matthew Francis Stephen, B.Sc. (Dun.), Gorsefield, Patricroft, Manchester. [M.]
- · Clark, Arthur Stanley, B.Sc. (Lond.), 16, Richmond Hill, Langley Green, Worcester. [M.]
 - Clark, Lieut, Leslie Melville, 3, Harley Road, Hampstead, London, N.W. 3, [I.I.; S.]
 - Crabtree, Herbert Grace, M.Sc. (Liv.), 53, Egerton Road, Wavertree, Liverpool. [Research; Dyes.]
- Dick, James Scott, B.Sc. (St. Andrews), 93, Wellmeadow Road, Catford, London, S.E. 6. [M. Research.]
- Dixon, Stanley, M.Sc. (Sheff.), 17, Morton Terrace, Gainsborough, Lincolnshire. [War Work.]
- Downs, Edmund, M.Sc. (Manc.), Mount St. Lawrence, Holmes Chapel, Cheshire. [M.]
- Drakeley, Thomas James, M.Sc. (Lond.), The Chemistry Department, Mining and Technical College, Wigan. [Senior Lecturer.]
- Eastburn, Wilfred James Stevenson, Towerville, Helensburgh, Dumbartonshire. [I.I.; S.]
- Eastick, Frederick Charles, M.A. (Cantab.), Malford Lodge, Snaresbrook, London, E. 8. [Works Manager.]
- Edwards, Owen Charles, B.Sc. (Wales), 46, Saxon Road, Faversham, Kent. [M.]
- English, Solomon, M.Sc. (Sheff.), High Street, Clowne, Chesterfield. [I.I.; Glass Research.]
- Esling, Fred, A.C.G.I., 36, Kenilworth Court, Putney, London, S.W. 15.
 [M. Research.]
- Evans, Corporal David Thomas, B.Sc. (Wales), County School, 3, West Street, Whitland, S. Wales. [S.]
- Evans, Frederick Page, B.Sc. (Lond.), 8, Vicarage Road, Frindsbury, Rochester. [M.]
- Evans, Henry Jackson, B.Sc. (Lond.), Taormina, Burdon Lane, Cheam, Surrey. [War Work; Research.]
- Evans, 2nd Lieut. Horace George, B.Sc. (Birm.), B.A. (Oxon.), 393, City Road, Edgbaston, Birmingham. [S.; M.]
- Ferraboschi, Frederic, M.A. (Cantab.), 21, Lawrie Park Road, Sydenham, London, S.E. 26. [Research.]
- Forbester, Robert Edward, M.Sc. (Dun.), Holly Lane, West Smethwick, Birmingham. [M. Research.]
- Gale, Lieut. Robert Cecil, A.C.G.I., 38, Scarsdale Villas, Kensington, London, W. [S.; M.]

- Garratt, Walter Reginald, M.Sc. (Sheff.), 128, Blair Athol Road, Sheffield.
 [Govt. Lab.; M. Research.]
- Girton. Miss Annie Phoebe, B.Sc. (Lond.), 61½, Quentin Road. Blackheath, London, S.E. [M.; Govt. Lab.]
- Glendinning, William Gerald, B.A.(R.U.I.), B.Sc.(Q.U.B.), 9. Church Circle, Farnborough, Hants. [S.; M.]
- Goddard, Archibald Edwin, B.Sc. (Birm.), The Osborne, Irvine, Ayrshire.
 [M.]
- Graham, Joseph, B.Sc. (Dun.), Chemical Laboratory, Elswick Leather Works, Shennal Street, Newcastle-on-Tyne, [War Work.]
- Griffiths, Edward Landseer Parry, B.Sc. (Sydney), P. 13 West, Gretna, Scotland. [M.]
- Guest, Lieut. Peter Healey, M.A., B.Sc. (Manc.), Ingleside, Orrell Mount, Wigan. [8.]
- Hadfield, John, M.Sc. (Sheff.), 9, Christchurch Road, Sheffield. [M.]
- Haward, William Arthur, B.Sc. (Lond.), A.R.C.S., D.I.C., No. 2, Staff House, Eastriggs, Dumfriesshire. [M. Research.]
- Herbert, Alfred Edwin, B.Sc. (Wales), 21, Fitzwilliam Street West, Huddersfield. [M.]
- Hickson, Lieut. Bernard, M.Sc. (Leeds), Moor Top House, Ackworth, nr. Pontefract. [S.; M.]
- Hollings, Harold, M.Sc. (Leeds), 1, Northumberland Road, London, S. E. 23.
 [M. Research.]
- Howell, Lieut. Owen Rhys, B.Sc. (Wales), 61, Sydenham Park. London, S.E. 26. [S.; M. Research.]
- Howells, Oliver Richard, B.Sc. (Lond.), 24, Goddington Road, Strood, Rochester. [S.; M.]
- Jones, Robert Henry, M.Sc. (Manc.), Thornville, Fulwood Hall Lane, Preston, Lanes. [Head of Chemical Department, Harris Institute, Preston.]
- Kirby, George Gerald, M.Sc. (Liv.), 36, Hampstead Road, Elm Park, Liverpool. [M. Research.]
- Lamble, Alfred, M.Sc. (Liv.), 28, Venmore Street, Anfield, Liverpool.
 [M. Research.]
- Leslie, Miss May Sybil, M.Sc. (Leeds). 2, Alexander Mount, Litherland, Liverpool. [M.]
- Lewis, 2nd Lieut. John Stanley, B.Sc. (Wales), Pembroke House, Ferryside, S. Wales. [S.]
- Llewellyn, Lieut. Benjamin, M.Sc. (Manc.), 11, St. Silas Street. Ardwick. Manchester. [Research; S.]
- Marples, Major Morris Edgar, B.Sc. (Liv.), No. 3, Main Supply Depôt, Leeds. [S.]
- McCallum, Louis Francis, Government Laboratory, Strand, London, W.C. 2. [Govt. Lab.]

- Mellor, Benjamin Stanley, M.Sc. (Vict.), 70, Ardrossan Road, Saltcoats, Ayrshire. [M. Research.]
- Middleton, Herbert, M.Sc. (Manc.), 97, Westdown Road, High Road, Stratford, London, E. 15. [Research; S.]
- Morgan, Benjamin Stanley, B.Sc. (Wales), 22a, Lambrook Terrace, Fulham, London, S.W. 6. [M.]
- Morley, Frank Isaac, Ph.D. (Heidelberg), B.Sc. (Lond.), 30, New North Road, Huddersfield. [M. Research.]
- Morris, Captain Ivor Prys, B.Sc. (Wales), "N" Special Coy., R.E., B.E.F. [S.]
- Pelling, Captain Albert James, D.S.O., M.C., B.Sc. (Lond.), "N," Special Coy., R.E., B.E.F. [S.]
- Phillips, David Luther, B.Sc. (Wales), 13, Park Wern Road, Sketty, Swansea. [M.]
- Pickard, Captain Herbert, B.Sc. (Wales), 3rd Cheshire Regiment, Newcastleon-Tyne. [S.]
- Pugh, John, B.Sc. (Wales), Penrhyn Villa, Burry Port, Carmarthenshire.
 [M.]
- Roberts, Robert Pierce, B.Sc. (Wales), 65, South Road, Smethwick, Birmingham. [M.]
- Robson, Stanley, M.Sc. (Dun.), D.I.C., Hunston, Chatsworth Road, Upper Parkstone, Dorset. [M.]
- Roche, James William, B.Sc. (Bris.), 30, Belmont Road, Portswood, Southampton. [M. Research.]
- Slater, John Wardle, B.Sc. (Manc.), Ivydon, Longfield, Kent. [M. Research.]
- Sorrell (née O'Hara), Mrs. Janet Louisa, A.R.C.S.I., Ilfracombe, High View Avenue, Grays, Essex. [M.]
- Stephens, Victor Ewart, A.R.C.S.I., Sheltonville, Arklow, Co. Wicklow, Ireland. [M.]
- Stocks, Herbert Holroyd, M.Sc. (Leeds), 5, Britannia Terrace, Cleckheaton, Yorks. [S.; M.]
- Third, John, M.A., B.Sc. (Aberd.), Messrs. Nobel's Explosives Co., Ltd., Ardeer Factory, Stevenston, Ayrshire. [M. Research.]
- Thole, Ferdinand Bernard, D.Sc. (Lond.), Technical College, East Ham, E. [M. Research.]
- Vickers, William, B.Sc., Tech. (Manc.), Mayfield, Annan, Dumfriesshire, Scotland. [S.; M.]
- Weyman, Lieut. Geoffrey, M.Sc. (Dun.), The Cwm, Saltwell Road, Low Fell, Gateshead. [S.; M.]
- Whitworth, Cecil William, A.C.G.I., 11, St. Andrew's Road, Bedford. [M.; S.]
- Williams, Walter Beynon, B.Sc. (Wales), 5, Sandhills, Stevenston, Ayrshire.

Willson, 2nd Lieut. Francis George, B.Sc. (Bris. & Lond.), H.M. Factory, Avonmouth, Bristol. [S.; M.]

Woodworth, William Fitzgerald, A.R.C.S.I., 8, Yew Street, Fartown, Huddersfield. [Dyes.]

Zealley, Alec Thomas Sharland, B.Sc. (Lond.), 62, The Rand, Eastriggs, Scotland. [M.]

New Students.

Ayling, Ernest Edward, Argyle, Woodthorpe Road, Ashford, Middlesex. Grawley, Miss Ailsa Victoria, 41, Wroughton Road, London, S.W. 11. Dickes, Miss Winifred Esther, 60, Melbury Gardens, Wimbledon, London, S.W. 19.

Doughty, Joseph Neatby, 33, Clarkehouse Road, Broomhall, Sheffield. Edmonds, Ronald Walter Quaife, 58, Park Street, Greenwich, S.E. 10, Jackson, J. Stanley, B.Sc. (Dun.), 7, Delamare Street West, Crewe. Jones, Richard Arthur, 14, The Avenue, High Barnet, Herts.

Kotibhaskar, Moreshvar Ganesh, College of Technology, Manchester. Long, Henry Lawrence, 31, South Beach Road, Ardrossan, Ayrshire.

Millman, Cyril Guy, 56, High Street, Egham, Surrey.

Murdoch, Donald George, 26, Olive Road, Cricklewood, London, N.W. 2.

Roy, William, 155, Comely Park Street, Glasgow.

Speakman, Gruffydd Thomas. B.Sc. (Wales), 6, Newton Road, Faversham, Kent.

Spearing, Kenneth Arthur, Winslade, Eversfield Road, Reigate, Surrey. Tayar, Robert Alfred Victor, 2, Laxey Road, Rotton Park, Birmingham. Taylor, James, 113, Osborne Road, Forest Gate, London, E. 7.

DEATHS. Fellows.

Thomas Charles Cloud, A.R.S.M.
Charles Gerard Cresswell.
William Adam Dixon.
Alfred Fairfax.
William Jervis Eyre Foakes.
Frederick William Streatfeild.
Edmund Albert Letts, Hon., D.Sc. (R.U.I.), Ph.D. (Göttingen).
Henry James Helm, I.S.O.
William Joel Kemp.
Thomas Tyrer.

Students.

Lieut. Clarence Edward Butcher (reported wounded and missing; presumed dead).

2nd Lieut. James Salsbury Smith (died on service).

General Notices.

Professional Organisation.—Fellows and Associates will receive with this part of the Proceedings notice of an Extraordinary General Meeting to be held in the Great Hall, King's College, London, on Saturday, April 27th, at 10.30 a.m. Proposals will be considered for modifying the regulations and constitution of the Institute in accordance with the Report issued to the members on January 31st last and subsequently published in Proceedings, Part I. (pp. 21—25), with certain minor amendments subsequently agreed upon with the representatives of the proposed British Association of Chemists.

There appears to have been some misunderstanding with regard to the decision of the Council not to adopt the first proposal of the Association.

The proposal was as follows:-

"That the Institute of Chemistry should become the sole registration authority for chemists—an authority bearing no relation whatever to the granting of the diplomas A.I.C. and F.I.C.—with a view to the Institute carrying out the objects of the proposed British Association of Chemists as outlined in the circular calling the meeting held at Manchester on November 10th, 1917."

The effect of the proposal would have been that, for the purpose of carrying out objects already included among those of the Institute, the latter would become "an authority bearing no relation whatever" to some of the most important of its existing functions. This was understood to involve the creation of a virtually separate registration authority, and the proposal did not commend itself to the Council.

The misunderstanding arose through a number of members and others having read the proposal as if limited to the words "That the Institute of Chemistry should become the sole registration authority for chemists." The Council are agreed that the Institute should become, as far as possible, the sole registration authority for qualified chemists; they also have before them proposals for extending the Studentship of the Institute.

Examinations.—Candidates who desire to present themselves for examination in July are requested to communicate with the Registrar.

Examinations in Biological Chemistry.—The Council will be prepared to arrange for an Examination in Biological Chemistry, Bacteriology, Fermentation, and Enzyme Action to be held in October, 1918.

Notice to Associates.—Associates elected prior to February, 1915, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, may obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in making known suitable appointments for professional chemists.

The Library.— The Library is open for the use of Fellows, Associates, and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. to 2 P.M., except when Examinations are being held.

The German Union of Technical and Scientific Societies.—Sir Robert Hadfield has directed attention to a movement having in view the furtherance of close cooperation between Technical Societies in Germany. A Union of such societies has been formed, the Managing Committee of which has decided to create an intermediary agency between technical industries and scientific institutions for the carrying out of research work in order that industries not equipped for experimental work, especially smaller concerns, may be afforded facilities for the solution of technical problems. The Union will refer such problems to suitable workers. Another object is to secure further representation of technologists on legislative bodies.

The Union leaves to its individual members freedom of action in the special domain with which each constituent association has previously dealt, but is intended to ensure joint action when necessary on important questions which may arise from time to time.

The promoters state that the blockade has necessitated the remodelling of the foundations of German economic life, the production of raw materials and food from the natural resources of the country, the utilisation of waste materials, and the production of substitutes. The new requirements can only be obtained by disregarding the question of cost price and all considerations with regard to markets and the risks involved.

It is intended that the activities of the Union, which correspond in some respects to those of our Department of Scientific and Industrial Research, shall continue after the war.



THE

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

PROCEEDINGS.

1918.

PART III.

PROCEEDINGS OF THE COUNCIL (APRIL—MAY, 1918).
REPORT OF EXTRAORDINARY GENERAL MEETING: 27th APRIL,
1918.

PRACE DIVINE FOR LOCAL GESTIONS

DRAFT RULES FOR LOCAL SECTIONS.
MEMBERS, STUDENTS, Etc., SERVING WITH THE FORCES.
CHANGES IN THE REGISTER.

NOTICES. ABSTRACTS OF REPORTS OF GOVERNMENT COMMITTEES, Etc.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary,

30, Russell Square, London, W.C. 1. June, 1918.

Proceedings Committee, 1918-19.

HORATIO BALLANTYNE (Chairman),
SIR HERBERT JACKSON, K.B.E. (President),
CECIL H. CRIBB,
J. T. DUNN,
ALEXANDER LAUDER,
J. H. LESTER,
D. NORTHALL-LAURIE,
G. H. PERRY, M.B.E.,
GEORGE STUBBS, O.B.E.

THOMAS TICKLE.

Proceedings of the Council.

APRIL-MAY, 1918.

Extraordinary General Meeting.—The report of the Extraordinary General Meeting of the Institute, held on April 27th, is published in this part of the Proceedings.

The policy indicated in the Resolutions having been determined, the Council have been in consultation with the legal advisers of the Institute with a view to taking the steps necessary to effect more completely the consolidation in one body of properly trained and competent chemists in all branches of the profession.

The Council are advised that the alterations involved do not affect the Charter of the Institute in any way. The Regulations for the Admission of Associates and Fellows will, therefore, be modified, without delay, in accordance with the Resolutions passed at the meeting.

With regard to election to the Fellowship under section 5 of the Charter, and election to the Associateship under the temporary (War) conditions, the Council will review its policy from year to year immediately after the Annual General Meeting.

Local Sections will be formed for which Draft Rules have been framed and are published in this part. These Rules, which will serve for present purposes, will be submitted to the Sections for acceptance before final adoption.

Committees will be formed where necessary to represent special branches of the profession; the provisions for the admission of students will be reconsidered; steps will be taken towards closer co-operation between the work of the Institute and that of the Universities and Colleges; the question of publications will be considered; and further endeavours will be made to bring before the public the importance of chemistry to the country, its industries and commerce, and generally to forward the interests of chemists in every way possible.

Elections.—The Council continue to receive a considerable number of applications from candidates for the Fellowship, many occupying positions of responsibility and showing a good record of training and practical experience. They feel that it is often highly desirable in such cases that candidates who appear likely to be eligible for admission to the Fellowship, with or without examination, should be interviewed, and the Nominations and Examinations Committee has therefore been empowered to conduct such interviews and to report thereon to the Council.

The Council have also considered the method of dealing with candidates possessing specialised qualifications, such as A.R.S.M., B.Met., and degrees indicating special knowledge of various branches of applied chemistry, tinctorial, leather, etc.

It would not accord with the aim of the Institute to recognise specialised training for the Associateship, except in cases where it follows a full systematic course on the basis of the Regulations; but provision will be made for dealing with this matter when the Regulations are under further revision.

Examination.—The Council have received from the Board of Examiners a report on the Examination, for the Associateship, of a candidate who presented himself, in the branch of Organic Chemistry, at Otago, New Zealand. The candidate, Mr. Cedric Stanton Hicks, M.Sc. (Otago), passed and has been duly elected.

The thanks of the Council have been accorded to Dr. J. K. H. Inglis for his services as local supervisor.

Patents and Designs Bill, 1917.—The Council have been asked to consider the Patents and Designs Bill, 1917, and the advisability of taking any steps in support or opposition, having in view the opinions expressed by a Conference of Scientific and Technical Societies, held at the Institution of Mechaincal Engineers, on March 11th. The following opinions have been framed for the consideration of the Institutions mainly concerned in the matter:—

(1) That the relief of patentees or beneficial owners of patents whose interests have been prejudiced by conditions arising out of the war should not be dealt with by the Patents and Designs Bill, but by a separate measure—either an Order in Council or a special Act.

(2) That it is desirable that the relief should be limited to the cases of

patents entirely and beneficially owned by British subjects.

(3) That relief should be by way of extension of the term of the patent-

the period to be decided by the tribunal dealing with the matter.

(4) That applications should be accompanied by a statutory declaration that the applicant has been prejudiced by conditions arising from the war and that the onus should then be on the objector to show cause why the extension should not be granted.

Paper Control.—The Council of the Institute recently decided to support a representation to the Paper Controller, with a view to securing, in the case of scientific journals, some modification of the Order limiting the supply of paper for periodical publications for the current year to one half of the amount consumed by them in the previous twelve months.

In reply to the Conjoint Board of Scientific Societies, by whom the representation was made, the Controller stated that if the publications are scientific works his Department will consider the question of endorsing priority certificates for them; if, however, they are periodicals containing, for example, reports of scientific meetings, it will be necessary for the Department to consider each case on its merits. The Council, therefore, are in communication with the Controller with reference to the publications of the Institute, which, in view of the pressing nature of its work in the organisation of the profession of chemistry, can hardly be reduced at the present time.

The Late G. T. Holloway.—Under the will of the late Mr. George T. Holloway the Institute has received a number

of old books, formerly the property of Sir Humphry Davy, John Davy and Lady Davy, and £25 to be expended on the acquisition of a bookcase for containing these books and such others as the Institute may wish to include therewith.

Committee on Chemical Trade.—The report of the Committee appointed to advise the Ministry of Reconstruction as to the procedure which should be adopted for dealing with the Chemical Trade (Cd. 8882) expresses the opinion that the Association of British Chemical Manufacturers, generally speaking, represents the trade as a whole, and, therefore, the Ministry in dealing with the Chemical Trade could properly act in collaboration with that Association; but with a view to convenience of practical working it is suggested that a Standing Committee should be established fully representative of all interests concerned.

It was also referred to the Committee "to consider and report upon any matters affecting the Chemical Trade which could be more effectively dealt with by the formation of special organisations for the purpose, and to make suggestions in regard to the constitution and functions of any such organisations." On this the Committee advise the establishment of a Chemical Trade Section of the Ministry of Reconstruction, controlled by a scientific man of good standing and suitable staff working in conjunction with the Standing Committee already referred to.

The duties of the Section would be :-

"1. To ascertain with the assistance of the Standing Committee the chief problems which are likely to arise in the process of reconstruction after the war, and the best means of dealing with them.

"2. To survey generally the Chemical Trade, both at home and abroad, and in consultation with the Standing Committee to afford advice for the broadening and improvement of the Chemical Trade of this country.

"3. To collect and disseminate information on and statistics of the

Chemical Trade.

"4. To collect and collate as much information as is available on the work which has been done during the present war, which would, no doubt be of great interest and assistance to the Chemical Trade as a whole."

In proposing that reference should be made to organisations other than those founded for trade purposes, the Institute of

Chemistry was not specifically mentioned, but the Council have since been informed by Sir Keith Price, Ministry of Munitions, that the list was not intended to be exhaustive; that the omission of the name of the Institute was purely an oversight; that the very valuable work which the Institute has done for the Government during the war has been most thoroughly appreciated; and that the Minister of Reconstruction will consult any institution or association he considers competent to advise him on any subject with which he may have to deal.

Chemical Society Library.—The Council of the Chemical Society have submitted a scheme for enlarging and widening the scope of the library of the Society, and extending the use of it to the members of other scientific societies willing to contribute to the proposed development. The Council of the Institute have the proposal under consideration.

Professional Chemists and the War.—The following Fellows of the Institute have received honours for services in connection with the War:—

C.B.E.
Professor Edward Charles Cyril Baly, F.R.S.
Edward William Lucas.

O.B.E.
Alexander Charles Cumming.
Frank George Edmed.
Thomas Eustace Hill.
William Rintoul.
John Rogers.
Samuel Smiles, F.R.S.
Martha Annie Whiteley.

M.B.E.
Edward Victor Evans.
James Irvine Orme Masson.
Frances Mary Gore Micklethwait.
James Min Thomson.
Frederick Malcolm Wharton.

The Chemical Laboratory of the Inspection Department of the Ministry of Munitions, Royal Arsenal, Woolwich, has been re-organised as a Directorate. Mr. George Henry Perry, M.B.E., has been appointed Director, and Mr. Oliver Trigger, M.B.E., Technical Adviser and Inspector, while Mr. F. G, Edmed, O.B.E. and Mr. A. V. Elsden have also been appointed Inspectors.

Death of Mr. Alfred Gordon Salamon, Hon. Treasurer.—The Council have to deplore the loss sustained

by the Institute through the death of Mr. Alfred Gordon Salamon, and desire to place on record their high appreciation of his valuable services as Honorary Treasurer since 1903. Apart from the ordinary duties of his office, which he discharged with consistent devotion and thoroughness and with unfailing courtesy to those with whom he was associated, the Council would recall the circumstance that the contributions to the Building Fund, directly attributable to his active interest on behalf of the Institute, amounted to over £2,000—more than 12 per cent. of the total received. In 1899, Mr. Salamon contributed a hundred guineas to the formation of the Library; a few years later presented a complete bound set of the Berichte from 1868 to 1894 inclusive; and last year gave a bronze statuette of Pastcur, which was placed in the Council Room.

Death of Sir Alexander Pedler, C.I.E., F.R.S.— The Council record with much regret the death of Sir Alexander Pedler, an Original Fellow and former Vice-President of the Institute. The Council had invited Sir Alexander to accept the office of Hon. Treasurer, and he had agreed to do so, only a few days prior to his sudden death while attending a meeting at the Ministry of Munitions.

Treasurer.—The Council have under consideration the election of an honorary treasurer in the place of the late Mr. Alfred Gordon Salamon. Mr. William Thomas Burgess, Vice-President, has agreed to act *pro tem*.

Death of Mr. Frederick William Streatfeild.—Many Fellows and Associates will have learned with regret of the death of Mr. F. W. Streatfeild, who will long be remembered as an able teacher, especially by those who received their training at Finsbury Technical College, where he was a member of the staff from 1883 until shortly before his death.

Obituary notices will appear in Proceedings, Part IV., 1918.

Extraordinary General Meeting

Held at King's College, London, on Saturday, April 27th, 1918, at 10.30 a.m., Sir Herbert Jackson, K.B.E., F.R.S., President, in the Chair.

The President, in opening the proceedings, said that the terms of the resolutions for the consideration of which the meeting was called, had been circulated to all the members, together with Part II. of the Proceedings for 1918, containing a report of the Annual General Meeting and Sir James Dobbie's presidential address. Much regret would be felt at the fact that Sir James Dobbie was unable to attend the present meeting, and that regret would be still greater because his absence was due to the loss of his elder son in the war.

The President also referred to the loss which the Institute had sustained by the death, which had occurred since the Annual General Meeting, of the Honorary Treasurer, Mr. Alfred Gordon Salamon, whose loyal service to the Institute

was so deeply appreciated.

Before proceeding to move the first resolution on the agenda, he desired to call attention to the main duty of the Institute of Chemistry, as of all other public bodies, namely, to do its best for the nation at the present time. In the case of the Institute an essential part of that duty appeared to be the organisation of the whole body of the trained and competent chemists of the country. The object of that meeting, accordingly, was to ascertain how best the Institute might modify its procedure of past years in order to bring the Institute into line with the developments that had taken place since it was founded, and to render it the proper central organisation for the whole profession of trained and competent chemists. He desired to emphasise the words "trained

and competent," and this set of resolutions was put before the Institute for the purpose of assisting in the proper interpretation of those words.

Other points for consideration were the formation of local sections, and the securing of the efficient representation of local centres on the Council of the Institute. The policy of the Council of the Institute, in barest outline, would be to organise properly trained and competent chemists; to revise the policy of the Institute annually as occasion required; and to ensure that election to the Fellowship was only possible when there was the fullest evidence of a high standard of qualification and experience, i.e., that the hall-mark of the Fellowship should be the hall-mark of a trained expert. In order to clear away any possible misconception which might exist as to the changes that had taken place, and necessarily taken place, in regard to the Associateship, he would, without entering into any controversial matter, point out that the training of chemists in universities and colleges of university rank had progressed very much indeed during the last twenty or twenty-five years, and a time had arrived when a man who had qualified in a university could rightly be considered to be well on the road to becoming a trained and competent chemist. In earlier days the door through which the Institute was entered was the final examination for the Associateship, and by that examination it had been possible to determine, and to determine singularly well, whether a man really was trained and competent as a practising chemist. But progress and evolution in teaching had made it necessary to recognise that a stage had been reached when a man might be taken into the Institute as a potential expert without necessarily being made to pass the final examination. What, however, was the obvious deduction from that? It was that, before that man was hall-marked with the Fellowship of the Institute, it must be ascertained that he was a trained expert, and in the absence of the evidence furnished by the Institute's own examination, the proof required of his right to be called an expert and to be admitted to the Fellowship must be such as

to be really conclusive. If, in reference to that, he said that it was the most definite policy of the Council of the Institute to "stiffen up" the Fellowship, that must not be understood as meaning that it was not stiff before, while the one portal of the Associateship final examination was insisted upon. When, however, other doors were added, then, in hall-marking a man as a trained expert, it was necessary to see that he was at least as efficient as he was considered to be when he had passed the Institute's own examination and otherwise complied with the requirements of the Charter. From that it was a perfectly logical deduction that the Council must see that there was no question of proceeding to the Fellowship "automatically," or merely by efflux of time, but that the case of every candidate for the Fellowship must be most jealously investigated.

Then it might be mentioned that the rules for local sections were very nearly ready, and that the Council recognised that its policy must be one of closer co-operation with other bodies in educational matters, though that was a matter into the explanation of which he could not then enter. Further, the Council's policy would include the extension of its publications, in order to maintain interest in professional matters. In fact, the Council's policy might be generally summed up by saying that wherever an opportunity arose that opportunity would be taken to further the interests of chemists educationally and professionally.

Having made these remarks with the object of clearing the ground, he would proceed to move the first resolution on the agenda, as follows:—

"That it is desirable that the Council modify the existing requirements of the Institute, in order to include as many chemists as possible in the Membership (Associateship and Fellowship) of the Institute, so far as such a course is within the provisions of the Royal Charter of the Institute."

Dr. J. T. Dunn, in seconding the resolution, said that it seemed to him that it was one which must be universally

acceptable to the Institute, and that any differences of opinion that might arise in regard to it would merely have reference to the way in which it should be carried out. They all wanted the Institute to represent the whole body of trained and competent chemists in the Kingdom. At the present time it could not truthfully be said that it did represent that body, and if, while maintaining the high standard hitherto exacted of candidates for admission to the Institute, it was possible by any means to embrace in the Institute a much larger number than at present of trained and competent chemists, the Institute would be correspondingly strengthened, and in that measure the object they all had in view would be achieved. There could, he thought, be no difference of opinion as to the desirability of embracing within its membership a larger proportion, and ultimately the whole, of the trained and competent chemists of the Kingdom. The immediate question was whether the Institute should modify its rules in order to achieve that object; and again he thought there could be no difference of opinion as to the desirability of that. If the rules could be modified in such a way as to embrace, as the President had suggested, those young men who, at the first moment of their introduction to the Institute, might not yet be technical experts, but who in the future might reasonably be expected to become technical experts, and if by a modification of the Regulations provision was made to ensure that they were technical experts before they proceeded to the Fellowship, that, he thought, would be doing exactly the work that the Institute set out to do.

Dr. O. L. Brady, speaking in support of the resolution, said that he had found that among some Fellows of the Institute there was still some misconception as to the position of the Fellowship under the new Regulations. Many of those who had obtained the Associateship by examination seemed struck with the ease with which the Fellowship appeared to be obtainable. Before the 1917 Regulations were issued, an Associate wishing to be elected to the Fellowship was required to produce

evidence that he was not less than twenty-four years of age. and that since his admission as an Associate and for a period of three years therefrom he had been continuously engaged in the study and practice of chemistry in a manner satisfactory to the Council. The effect of the application of that regulation was that anyone who had passed the Associateship examination and had continued his studies in chemistry proceeded to the Fellowship, without, apparently, its being necessary that he should have achieved any very great distinction; the reason being that by his passing the Associateship examination and his subsequent experience he had, in the opinion of the Council, already proved his worth. When, however, the new Regulations were introduced, and it was proposed to admit a number of chemists to the Associateship without examination. the conditions of election to the Fellowship were changed, and the 1917 Regulations, instead of being as just quoted. were as follows :--

(a) That he is not less than twenty-four years of age;

(b) That he has since his admission as an Associate, and for a period of three years therefrom, been continuously engaged in the study and practice of chemistry in a manner that shall be satisfactory to the Council; and

(c) (i.) That he has carried out original research of sufficient merit in the opinion of the Council, or (ii.) That he has devised processes or inventions of sufficient merit in the opinion of the Council, or (iii.) In special circumstances, that he is possessed of knowledge and ability equivalent, in the opinion of the Council, to having fulfilled the conditions contained under (i.) or (ii.) above.

Failing compliance with the above conditions an examination will be imposed.

An Associate admitted after July, 1917, would therefore be required to furnish proofs of outstanding ability before being admitted to the Fellowship. He (Dr. Brady) had found that many Fellows and Associates who had passed the Institute examinations had the impression that the Council intended to allow Associates admitted without examination to proceed to the Fellowship automatically after the lapse of three years, but that had never been the intention of the Council, and it certainly was not the intention of the Council at the present time.

Captain J. A. Foster: Was it not stated at the Annual General Meeting that those Associates who had been elected to the Associateship without examination would proceed automatically to the Fellowship?

The President: I think not. What Sir James Dobbie said was that Associates would be admitted to the Fellowship under the regulations in force at the time when they were admitted to the Associateship.

Dr. Brady, continuing, said that a good deal of exception had been taken to paragraph (c) (iii.) of the 1917 Regulations, which, it had been suggested, was likely to afford a loophole by which Associates might be admitted to the Fellowship without attaining the high standard demanded by paragraphs (c) (i.) and (c) (ii.). He felt certain, however, that this had never been contemplated, but it must be recognised that in every regulation for admission to any degree there must be a certain amount of latitude; some saving clause must be inserted, as many cases might be imagined in which a man might be a proper candidate for the Fellowship and yet might not come within a hard-and-fast rule requiring the undertaking of original research or the devising of processes or inventions.

The President called attention to the quotation from page 15 of the Charter, which appeared on page 4 of the notice-paper, and which ran as follows:—

"Where candidates are unable to produce evidence upon the above points satisfactory to the Council an examination shall be imposed."

In order to make the matter clear, it would be incorporated in the next issue of Regulations.

Mr. F. H. Lees said that, as he understood it, the effect of the Council's policy would be that, while the qualification for the Fellowship was to be raised, the high standard that had hitherto obtained in connection with the Associateship was to be practically abandoned—so that the Associate of the future need not necessarily be a chemist at all in a sense that was likely to be generally accepted.

The President said that it would be seen from the further resolutions on the agenda that the very object of that meeting was to lay down the meaning of the expression "trained and competent chemist," and to ensure that every Associate should be a trained and competent chemist at the time he became an Associate. In some instances he might happen to be an expert as well, but he could not be elected a Fellow under any circumstances unless he had qualifications of a very high order.

Mr. F. M. Potter said that his remarks in support of this resolution would be somewhat of a personal character, and he spoke also for Mr. G. H. Perry. Mr. Perry, in his candidature at the recent Council election, had stood in opposition to admission to the Associateship without examination. (Mr. Potter) had not gone quite so far as that, but came forward with some doubt, such as was felt by many others, as to the efficiency of the scrutiny applied to the papers of those presenting themselves for admission to the Associateship without examination. He had been asked by Mr. Perry to state that, after getting the fuller information that perhaps he ought to have obtained before, but which he had at any rate now obtained as a member of the Council, he was convinced that the examination of all applications was perfectly thorough and he accepted the whole of the resolutions now on the agenda. Mr. Perry had attended the meetings of the Nominations and Examinations Committee since his election, and he (Mr. Potter), although not at the Committee meetings, had attended the Council meeting; and they were both convinced with regard to the election to the Associateship. Of

course it was not possible to guarantee that an isolated case might not get through the net, but this should not be allowed to retard progress; it was better to gather into the fold 2,000 chemists including one unsatisfactory man than to keep 1,999 qualified and efficient chemists outside. And, if anything were wanted in addition to the President's very definite statement, which he knew represented the view of the Council, on the policy with regard to the Fellowship, it was covered by the statement on page 4 of the notice-paper, as to the imposition of an examination should it be considered necessary, which disposed of nine-tenths of the objections that had been raised.

Mr. F. H. Lees, while supporting the resolution, pointed out that Sir James Dobbie, in his presidential address, gave utterance to the following expression of principle:—

"In considering how far it is possible to go in the direction of meeting the first of these requirements (i.e., the modification of the Regulations to allow of the admission of all chemists of a certain standing without examination), we have to bear in mind the limitations imposed upon us by our Charter as to the meaning which we must attach to the term 'chemist' in connection with the admission of Associates and Fellows, and unless we alter our Charter we must keep within those limits. The nature and extent of the training prescribed for Associates make it clear that the chemist of the Charter is a person who possesses a competent knowledge of the facts and principles of the science as a whole and a practical knowledge of the ordinary operations of chemistry which he is able to apply in any particular direction. That being so we are not entitled to admit as Associates those whose technical training—apart from the question of general education has been restricted to some special branch or some special application of chemistry, or to some limited series of chemical operations, no matter how important in themselves. We all know men who are adepts, for example, in certain branches of mineral or metal analysis, but whose knowledge of chemistry extends no further than is necessary for that work. Such men are skilled craftsmen; nothing more. They have no claim to rank with those who have laid a broad foundation of general scientific and chemical knowledge, and it is clear, I think, that we cannot admit them to the Associateship of the Institute. To do so we should require not merely to alter our Charter but to abandon the primary object for which the Institute was established."

That excellent principle was laid down by the former President of the Institute only three or four weeks ago, and he would respectfully suggest that it would perhaps simplify the present discussion if Sir Herbert Jackson would say whether he endorsed that principle

The President said that he endorsed the statement quoted by Mr. Lees absolutely—his views on the subject, if possible, even going beyond those expressed by Sir James Dobbie. Indeed, he would say that, in his opinion, any departure from it would not merely be a departure from the principles of the Institute, but would involve the almost immediate dissolution of the Institute.

Mr. Lees said that he was very gratified to hear so strong a statement from the President. In the notice of meeting it was stated that the powers under the Charter were vested in the Council, and, since the Council put forward this constitutional point, he would perhaps be excused if he also put forward a constitutional point. On page 16 of the Charter, at clause 10, it was stated that:—

"All powers which under the provisions of this our Charter may be exercised by the Council shall be exercised by them in accordance with and subject to the provisions of this our Charter and to the bye-laws of the Institute and the exercise of those powers shall be subject also to the control and regulation of any general meeting of the Institute but not so as to make invalid any act done by the Council previously to any resolution passed at a general meeting and any act or proceeding of the Council shall not be invalidated or be illegal in consequence of there being any vacancy in the Council at the time of such act or proceeding being done or taken."

He wished members of the Institute to understand that the clause quoted indicated that the result of the business at that meeting was not necessarily a foregone conclusion.

The President said that he was not sure whether he rightly understood Mr. Lees' views, but he gathered that Mr. Lees wished to impress upon the Council—and he was quite right in that—that they were subject to some control of the Fellows and Associates. But the Fellows and Associates were the Institute, and the Council were appointed to carry out the will of the Institute. The feeling of sympathy between the President, the Council, and the Fellows and Associates, not only existed but was so strong that it was unnecessary to labour the point. He assured Mr. Lees that it was really the voice of the members to which they were giving expression.

Mr. Lees said that, having drawn from the President that remark, he was repaid for all that he had said; but he thought it would be agreed that there had been some misgiving on the point.

The President said that such misgiving had arisen, as in so many other cases, from not saying what one meant, and also from the fact that chemists were not organised. The Institute had determined, with the help of its members, to bring about that organisation.

Mr. G. A. Bracewell, speaking in opposition to the resolution, quoted from pages 6 and 7 of the Charter, from which it

appeared that the Institute was founded for the definite and specific purpose of the elevation of the profession of analytical and consulting chemistry, and was not meant to be representative of chemists generally.

The President pointed out that, on the pages from which Mr. Bracewell had quoted, the statement was made that the Fellows and Associates of the Institute—exceeding 430 in number—comprised at that time nearly all the professors and teachers of theoretical and applied chemistry, and the leading analysts in the United Kingdom, together with the chemical advisers of various departments of the Government. Surely such a view as Mr. Bracewell suggested was not taken by anyone at the present day. Their object was the organisation of trained and competent chemists. They had to consider those who, for the purposes of the industries of the future, would have to be highly trained-men who, with a general knowledge of science and a special knowledge of chemistry, could deal with industrial problems-and all others whom the Institute ought to include. In pursuing the larger object of organising chemists it was not necessary to deal separately with analytical and consulting chemistry. He had no wish to stop any relevant discussion; the object of the meeting, however, was, not to debate, but to answer the question as to whether they could or could not consolidate the profession of chemistry.

Mr. Bracewell then moved as an amendment that the wording of the resolution be altered to the following:—

"That it is desirable that the Council modify the existing requirements of the Institute in order to include as many analytical chemists as possible in the membership (Associateship and Fellowship) of the Institute, so far as such a course is within the provisions of the Royal Charter of the Institute."

The amendment was not seconded.

Prof. E. C. C. Baly said that, while he heartily supported the resolution, he was one of those who had felt a little disquietude in regard to the question of the passage of Associates to the Fellowship, and he felt much indebted to the President for his statement of the Council's policy in regard to that question. Dr. Brady's remarks, however, had left him not quite so clear on the matter as he had felt before. The great possession of the Institute, and one of which it had a right to be proud, was the final examination for the Associateship. Under the present resolution it would be possible—quite rightly, he thought—to admit men and women as Associates of the Institute without that examination, i.e., accepting certain perfectly justifiable alternatives. But he thought that an assurance should be given that, in the case of Associates so admitted, their admission to the Fellowship without examination would be, not the rule, but the exception. He did not propose to put forward any motion to that effect, because he thought that it would be undesirable in any way to bind the Council, but at the same time he felt, and he thought that the majority of the members of the Institute agreed with him. that the Fellowship of the Institute should be, as it indeed was, the highest possible qualification that any chemist could hold or aspire to; and therefore he thought that clauses (c) (i,), (c) (ii.), and (c) (iii.), especially the last, of the 1917 Regulations should be made use of only in the rarest possible circumstances. His reasons for saying that were these. If a chemist, when he applied for admission to the Institute, was possessed of that knowledge which, in the opinion of the Council, made him good enough for admission as an Associate, he could apply for admission to the Associateship direct. If during the next three years he gained such knowledge as to make him, in the opinion of the Council, worthy of admission to the Fellowship, was it any hardship to ask him to pass an examination? He should be grateful if the President could give the further assurance that it would be the general practice of the Council, rather than the exception, that Associates admitted without examination should, before being admitted to the Fellowship.

be required to pass a specialised examination. He was very jealous of the Institute's examinations, which, from his experience as a professor of chemistry, he considered to be more searching than any university examination of which he had knowledge.

The President said that he gathered that Prof. Baly was not referring to Associates whose age was so advanced that it would be impracticable to examine them in the ordinary way. or to those whose qualifications might be of a particularly outstanding character. His own definite feeling was that the Institute owed a responsibility, not only to itself and its Fellows, but to the nation, to make its Fellowship a real qualification, so that any holder of it might be trusted as a safe man in the subject of chemistry; and therefore he felt that no test which ensured that was to be regarded as too stringent. Where examination in the ordinary way was made impossible by age or other circumstances, special evidence of qualification must be required. The Council had made provision for the appointment of a sub-committee of the Nominations and Examinations Committee to deal with such cases. and no candidate would be recommended for admission to the Fellowship unless the sufficiency of his qualifications was absolutely beyond doubt. The Committee had power to decide whether they should or should not require candidates to pass an examination, and in ordinary cases such examination would involve no special hardship. In such cases an examination would have to be passed of a kind that would be determined by the careful consideration of the Council.

Prof. Baly thanked the President for his statement, which indicated a definite policy which he felt sure would be satisfactory to practically every one of the Fellows.

Prof. F. G. Donnan said that the policy, which was a wise one, of admitting to the Associateship in the manner laid down in the proposed resolutions university graduates without

special examination, rendered it at the same time necessary to raise the standard of qualification for admission to the Fellowship, and one would like to be quite sure that it was within the power of the Council under the present Charter to impose an examination for the Fellowship. It had been suggested that the Charter in its present form did not confer such power.

The President said that with regard to this matter the Council had taken legal advice, which was to the effect that, while clause 5 of the Charter stated the minimum qualification which the Council must exact from an Associate before he was admitted to the Fellowship, it did not prevent the Council from requiring a higher qualification. If it was found that the Charter stood in the way of requiring a higher qualification, it must be altered.

The resolution was then put to the meeting, and declared carried.

The President then moved the following resolution:-

II. "That it is desirable that any candidate who has complied with the following conditions be accepted as eligible to apply for admission to the Associateship of the Institute:—

"That he has attained the age of twenty-one years; and either

"(a) That he has obtained a degree with first or second class honours in chemistry (or other degree or diploma recognised by the Council as equivalent) after a three years' systematic day course, and (i.) has taken a further year's training in chemistry at a recognised university or college, or (ii.) has had two other years approved experience under a Fellow of the Institute or in a laboratory or works approved by the Council; or

- "(b) That he has obtained a degree with first or second class honours in chemistry (or other degree or diploma recognised by the Council as equivalent) after a four years' systematic day course; or
- "(c) That he has obtained a degree with first or second class honours in chemistry after training (by day or evening classes) and experience equivalent in extent and character, in the opinion of the Council, to the training and experience specified in the two preceding paragraphs;

"Provided in every case that the candidate has produced satisfactory evidence of training and examination in physics, mathematics, and an optional subject."

Mr. E. M. Hawkins said that he had pleasure in seconding this resolution, though he would say frankly that he would not have felt inclined to do so had it been proposed a year ago. When, eighteen months ago, he became a member of the Council, he was as strongly opposed as anybody to the admission of Associates without examination, the reason for his opposition being that there was then nothing to prevent such Associates from passing automatically to the Fellowship after three years' experience; and, however high might be the value to be placed upon the training given at universities and other colleges, he felt, with many others, that it was not sufficient to qualify a man for the Fellowship of the Institute. Now, however, that the Regulations for admission to the Fellowship had been altered in such a way that all Associates admitted after July, 1917, would have to pass a further barrier before admission to the Fellowship, his view was that it was very desirable that candidates who had had a minimum of four years' training and experience, as defined in this resolution, should be allowed to apply for admission to the Associateship of the Institute. One criticism which might possibly be levelled against the proposal was that there was just one loophole, namely, that under clause (c) it would be left to the Council to judge whether a candidate's training and experience were equivalent to the requirements of clauses (a) and (b). The answer to that possible criticism was that some little latitude must always be allowed to the Council of such a body as the Institute. They would not wish the action of their Council to be restricted to such an extent that exceptional cases might not be dealt with. When he became a member of the Council he was without previous experience of the organisation of the Institute beyond the passing of its examination and the payment of his subscription, but since then he had attended every meeting of the Nominations and Examinations Committee except one, and he had been surprised to find how much care and trouble was devoted to the cases which came before that Committee. He said that because there appeared to be some sort of feeling that this work had been done in a perfunctory manner; but no one who had ever attended the meetings of the Committee could come to that conclusion. He therefore had pleasure in seconding the resolution, feeling that it marked a step in the progress of the development of the Institute which, provided the standard of the Fellowship was maintained at the high level which was intended, would only be for the good of the profession generally.

Captain Foster said that, as a former member of the Council, it gave him great pleasure to support this motion. While doing so, however, he should like to express the hope that all members who desired to speak in the discussion would as far as possible be given a chance to do so, since many of them had travelled long distances on that occasion for the purpose of doing their best for the Institute. If they had any wrong impressions as to the manner in which this could best be done, the present was the time to remove such wrong impressions, not only from the minds of the speakers but, through them, from the minds of those for whom they spoke.

The President said that he cordially agreed with what

Captain Foster had said. As he had already remarked, however, it was necessary, at this very anxious period, to distinguish between action and debate. The object of the meeting was to decide upon the resolutions now on the agenda, and the exigencies of the moment rendered it necessary to do so within a somewhat limited time. While, therefore, he wished to place no restraint upon discussion relevant to the business to be done, he hoped that a general debate might be deferred until it might be possible, at some future meeting of a less formal character, to get the members together so that they might learn to appreciate each other's views.

Lieutenant B. S. Evans moved the following amendment:

"That candidates be admitted to examination after a period of day or evening class training approved by the Council."

While a great deal had been said on the question of the advisability of examining candidates, nothing had been said as to the conditions under which they should be admitted to examination. There were many clever men who were good and thoroughly trained chemists, but who had been prevented by circumstances from taking a three or four years' course of training in the daytime such as the Regulations prescribed, and now that they were older they still could not take such a course, but had obtained their education in other ways. Those men did not wish to avoid examination, but they were not always able to fulfil the conditions at present laid down for admission to the Institute's examinations. It had been stated that it was desirable to admit to the Institute all chemists who had been trained on a sufficiently wide basis, and the Institute must make up its mind, as was pointed out at the Annual Meeting, whether it was going to be the qualifying body for all the chemists of the Kingdom, or whether it should, on the lines of the Royal Colleges of Physicians and Surgeons, let its qualification be so restricted as to be a sort of hall-mark of super-excellence. There were very many young chemists who were a necessity to the technical industries of the country, and who were going to remain, and, if these men were not admitted to the Institute, they would protect themselves by forming other associations. The formation of the British Association of Chemists was simply the expression of that feeling; so that if—perhaps not now, perhaps not for five years, but ultimately—the Institute wished to become the sole registering body in the country for chemists, it might find itself faced by another association having a similar object.

The President said that he was not sure that resolution IV. on the agenda did not cover a good deal of what Lieutenant Evans had said.

Lieutenant Evans said that his reason for bringing the matter forward now was that the application of the subsequent resolutions seemed to be restricted as to time.

Professor Donnan asked whether it was not possible for the class of men referred to by Lieutenant Evans to be admitted to examination under the old Regulations.

The President said that that was provided for in resolution IV.

Mr. G. N. Huntly seconded the amendment. He could not quite understand why section (b) of the resolution should be maintained, *i.e.*, why a degree with first or second class honours in chemistry after a four years' course should be regarded as the equivalent of the qualifications set out in section (a). It might simply mean that the candidate had taken four years instead of three to get his degree, and in that sense it might be a lower qualification than (a). If a man was good enough to get a first or second class honours degree and yet had not been through a university course, he must be a man of unusual grit and very long training, and he (Mr. Huntly) did not think that three years or four years or any definite

time need be laid down. He thought that the possession of such a degree, together with evidence of training and experience, should be a sufficient guide, and that such a man should at any rate be admitted to the Institute's examination.

The President said that Mr. Huntly had raised a question which it was not possible to go into on that occasion, but which would come up later for consideration by all the universities and teaching institutions of the country. Its importance was recognised by the Council of the Institute, who had given it grave consideration; they had also regarded themselves as holding a "watching brief" for those men whose case Lieutenant Evans had been discussing; but the whole question was more or less in the melting-pot, and was being considered by various committees at the present time, so that he did not think that at that moment they could do more than say that they were shaping matters in accordance with present procedure and would keep a watchful eye on subsequent procedure.

Mr. E. W. Smith said that, as mention had been made of the British Association of Chemists, he desired, as a member of the Executive of that body, and more particularly as a Fellow of the Institute, to make it clear that the British Association of Chemists heartily supported these resolutions. The Association from its initiation had had no desire whatever that the standard of qualification required for chemists should be in any way reduced. Its primary object was, not to set up a qualification, but to combine all chemists in one registration body, and in the conferences which the Association had had with the Council of the Institute on this matter no question had ever been raised of reducing in any way the standard of qualification for chemists. An impression seemed to be abroad that the British Association of Chemists was likely to do the Institute harm, and as a member of the Institute he should be the last to countenance anything that would be likely to have that effect. As to the questions of detail raised by Lieutenant Evans and Mr. Huntly, the attitude taken by the

British Association of Chemists was that at the present moment it was not possible to legislate for every case, and that such legislation as was carried temporarily, either by the Institute or by the British Association of Chemists, must be of a safe character. Since the President had stated that the whole position would be revised annually, and that hard cases would be specially dealt with by the Council, it was felt that only such legislation as was safe should be carried out. The British Association of Chemists recognised that one of the fundamental parts of the chemist's training was, not the examination he had passed, but the type of training he had had; and consequently to do away with all conditions as to where or how or for what period a man had been trained, and only take into account the examinations he had passed, would be likely to be fatal to the profession of chemistry. accordingly supported the whole of the resolutions put forward by the Council.

At the suggestion of Mr. H. J. Bailey it was unanimously agreed to add to the resolution the words "without examination" after the words "Associateship of the Institute."

Mr. Bailey suggested that a good deal of the dissatisfaction which was expressed at the Annual Meeting was due to the impression which existed that under the new War Regulations men were being admitted who were not really prevented by their duties from sitting for examination. He did not think it was generally realised that the policy of the Council had been changed, and that it was now proposed to grant admission to the Associateship as a general rule without examination, whereas prior to 1917 candidates would have been required to pass the Institute's examination even if they had had the qualifications now laid down. If it could now be made clear that it was proposed to do away with the examination of qualified trained chemists for the Associateship, he thought that a good deal of that dissatisfaction would disappear. At the same time he should like to suggest that the Council might

take into consideration at some future meeting the possibility of safeguarding the position of the Fellowship, by laying down that, as a general rule, when an Associate had been admitted without examination, he should not automatically proceed to the Fellowship without examination, unless he was of such an age or able to comply with such conditions as might, in the opinion of the Council, entitle his case to special consideration.

The President said that the incorporation in the resolution of the words "without examination" would make Mr. Bailey's first point perfectly clear, while he heartily agreed with Mr. Bailey's further remarks.

Mr. Bailey also desired to suggest to the Council that all members of the Institute should be asked to take immediate steps to nominate for the Associateship those whom they thought ought to be included. He thought that it should not be left to candidates to apply, but that the Institute ought to go so far as to ask qualified chemists to apply for admission.

The President said that it was hoped that the proposed local sections would afford valuable assistance in that direction.

Mr. Bailey said that at present he had in mind five men whom he should like to nominate, and he should like to see adopted at this psychological moment the general policy of asking all members to nominate duly qualified candidates.

The President: That shall be laid before the Council.

Dr. C. A. Keane remarked that although in London it might be possible for candidates outside the universities or recognised colleges to qualify for admission to the Institute's examinations, that would not be the case in the provinces, where he thought there was likely to continue to be a considerable class of men of the type referred to, who were at present entirely debarred from coming to the Institute. From that standpoint he thought that Lieutenant Evans' amendment merited careful consideration.

The President asked whether Lieutenant Evans was thinking of men who had not perhaps gone through a university training, but had taken the trouble to obtain a really good education in physics, mathematics, and an optional subject, perhaps by continuation classes in the daytime, perhaps by evening classes, such as many engineers in the past used to attend who were now recognised as thoroughly well qualified.

Lieutenant Evans said that he was afraid his amendment was now out of order, having been overridden by the addition which had been made to the words of the resolution.

Professor Donnan said that there might be candidates willing to enter for the Associateship examination under the old Regulations, and the question would arise of widening the scope of their training.

The President said that that was a matter on which there was almost universal agreement, but it was not proposed to take any actual step with regard to it at the present meeting. In making a real profession of chemists, such as the public would recognise as a profession of duly qualified men, the method of widening the gate must be very carefully looked into, and one thing must be finished at a time.

Lieutenant Evans said that Mr. Smith had misunderstood him in assuming that he suggested that evidence as to the nature of the training might be dispensed with. The training contemplated in his amendment was training approved by the Council. What he desired was that the training should not be limited to work in the daytime, as was the case under the 1917 Regulations.

Mr. Lees said that he understood Lieutenant Evans' suggestion to apply to men without university degrees who wished to obtain the Institute's qualification, but would prefer to do so by examination rather than without; and he (Mr. Lees) asked whether the Institute would provide that a candidate should be able to sit for examination if he so desired.

The President said that the examination was always open to anybody who could show himself fitted for it. He was afraid that he must rule that Lieutenant Evans' amendment was not before the meeting.

Mr. Lees said that hitherto the Institute had always insisted on the final examination, and had also attached importance to the nature of the candidate's training. It was well known that on many occasions holders of honours degrees had not succeeded in passing the Institute's final examination. He agreed, however, with the resolution so far as (a) and (b) were concerned, but not as regards (c), which permitted the training to be in day or evening classes. He did not think the training at evening classes was at all comparable in value to the training hitherto required. He laid stress upon the necessarily discontinuous character of evening-class training.

The President pointed out that even under clause (c) the candidate must have obtained first or second class honours in chemistry.

Mr. Lees said that while the examination itself was an excellent test the Institute had hitherto gone farther and defined the actual training.

The President said that some examinations were very poor tests at any time, and they were jealously guarding the training, so that he ventured to suggest that clause (c) could be left in with absolute safety. Otherwise an injustice might be done to a very worthy set of hard-working men, who were often better qualified than those who wasted time during the

day. The most self-reliant men and the hardest workers, not only in the chemical profession but in other professions as well, were frequently those who had acquired their technical training in the evening. He was, however, obliged to Mr. Lees, both personally and on behalf of the Council, for drawing attention to this matter, and the fact of its being placed on record would make it more perfectly certain that the nature of the training would be very jealously looked into in every case.

The President then put to the meeting resolution II. with the addition above referred to, and it was carried.

The President then moved the following resolution:-

III. "That, until December 31st, 1921, it is desirable that any candidate who can produce evidence satisfactory to the Council of having had a sufficient general and scientific education, and of having practised pure and applied chemistry for not less than seven years, and who holds a responsible position, should be accepted as eligible to apply for admission to the Associateship of the Institute, provided that he has complied with the provisions of the Charter of the Institute with regard to age, general education and scientific training—in Chemistry, Physics, Mathematics, and an optional subject—and that he has passed approved examinations in those subjects.

"Note.—In considering applications under this clause, the Council will expect candidates to produce evidence of having been trained and occupied in a manner which, in the opinion of the Council, is equivalent to fulfilling the conditions required of candidates admitted under II. (a)."

Mr. Horatio Ballantyne seconded the resolution.

Mr. C. H. Ridsdale thought that he was expressing the opinion of practically all the members present when he said that they had entire confidence in the Council and in the

policy which the Council were trying to carry out, and he thought that it would be in the interests of all present that these resolutions should be duly passed. He thought that it would be found that there would be an overwhelming majority in favour of all the resolutions.

Some discussion then took place, in which Professor Donnan, Mr. Lees, the President and Dr. Keane took part, as to whether the words "pure and applied" should be omitted from the resolution. Finally it was agreed that the wording should not be altered.

Mr. Lees then spoke in opposition to the resolution, remarking that it provided for the admission to the Associateship of men differing from those embraced by the second resolution in that they had not taken a university degree. He submitted that it opened the door to candidates who might not be chemists in a sense likely to be generally accepted. He complained that no standard was laid down for the "sufficient general and scientific education" referred to, the whole decision being left to the Council.

The President said that Mr. Lees had not done justice to the note appended to the resolution.

Mr. Lees said that the obtaining of a university degree such as was referred to in resolution II. would imply the passing of a preliminary or matriculation examination, and he thought it would simplify the matter if the President would assure the meeting that all candidates coming within this resolution would be required to pass at least the matriculation examination of one of the universities.

The President remarked that the Institute already accepted as satisfactory preliminary examinations the examinations of other bodies than the universities. Presumably what Mr. Lees wished was that the standard of general education for such candidates should, in the opinion of the

Council, be equal to that under II. (a), the standard for other subjects being equal to that obtaining in places where the Council considered the education to be of a first-class character. It would simply mean that the candidate had missed the opportunity of presenting himself for a university degree: that was all. The preliminary examination would be of the type of the London University Matriculation, the School Leaving examination, or the Senior Oxford and Cambridge Local examinations. Candidates coming within the scope of this resolution would be such as had obtained degrees or diplomas at first-class technical colleges-men of whom their teachers could say that, had they presented themselves for a university degree examination, they would with certainty have passed with first or second class honours. It was proposed, in accordance with resolution V. on the agenda, to extend the list of colleges and institutions recognised by the Council.

Mr. Lees said that it was the duty of the Fellows and Associates to see that the Council did not go behind those assurances.

The President said that there would be opportunities for discussing these matters at the annual general meeting.

Mr. Lees said that a great deal of damage could be done in twelve months.

The President said that it was proposed to make the investigation of such cases very strict indeed.

Mr. Lees said that they were being asked to give the Council practically a blank cheque.

The President said that that was not by any means the case. The powers of the Council were very limited. He agreed that the fullest safeguards were necessary, but he hoped that he had made it clear that the kind of examination

expected as a proof of general education was, as in the case of the scientific education, to be of a standard that would be admitted on all hands to be equal to that already required.

Mr. Lees said that he should like to ask Mr. Smith a question with regard to the British Association of Chemists. When that Association was formed, the first resolution on its programme provided that any person holding a university degree should be accepted as a member of the provisional Association, and he should like to ask Mr. Smith whether that provision had been adhered to, or whether men had been accepted as members who had not taken university degrees.

The President remarked that the question did not concern the Institute, but perhaps Mr. Smith would reply?

Mr. Smith said that the British Association of Chemists had fifteen local sections, representatives of which had held meetings once a fortnight for the past two or three months, and the motions now under consideration had been before the last two or three of those meetings. With one exception there had been no dissension from the agreement reached with the Institute on the part of any of the local sections, and the fact of such support negatived more or less the suggestion that the British Association of Chemists consisted largely of unqualified men.

Mr. Lees asked whether the President could give an illustration of the class of men whom this resolution was designed to benefit.

The President: Certainly, by pointing out what the resolution says, namely, that it applies to a man who has had a sufficient general education to satisfy the Council, and sufficient scientific training in chemistry, physics and mathematics, and has passed approved examinations; who has had not less than seven years' practical experience, and can

show evidence that he is a thoroughly good chemist, though he has not obtained a university degree. In cases in which the Council were not satisfied, the Associateship examination would be insisted upon.

Mr. Lees said that the term "responsibility" was a relative one. What was meant by a "responsible position" such as was referred to in the resolution?

The President said that Mr. Lees was putting the case in such a way as to elucidate the fact that the Council would have to guard this matter very jealously, while doing justice to men who would be recognised as well qualified except that their training happened not to have taken a certain form.

Mr. Lees said that that procedure was not considered safe by other organisations—in the medical profession, for example.

The President said that the profession of chemistry was not yet in the position of the profession of medicine. In the future candidates who came under this resolution and the next would become far fewer, if, indeed, they did not disappear altogether; but at the present time the evidence before the Council was that there was a good number of men of this class, whomit would be ridiculous to allow to remain outside the Institute. The Institute was trying to set its house in order; the profession of chemistry was not thoroughly organised as yet; but later on, when it was, the Institute would be able to go forward with confidence and make hard-and-fast rules as in the medical profession.

Mr. Lees said that there was a singular omission from this resolution. In the report, issued a short time ago, of the negotiations up to date between the Institute and the British Association of Chemists, it was laid down that candidates should not be less than twenty-seven years of age. In the present resolution that age limit was omitted.

Mr. Smith replying, at the request of the President, pointed out that the arrangement suggested in the resolution would come to an end on December 31st, 1921. There were at present many men of twenty-three or twenty-four who were holding responsible positions, who would not have reached the age of twenty-seven at that date. It was important to bear in mind that the Council would not allow any one to come in under this regulation unless he had fulfilled conditions equivalent to those laid down in resolution II.

Mr. Lees said that this resolution appeared to be designed to bring in a number of men who were unqualified—(No, no): Before they had obtained a "sufficient general and scientific education" they would be at least twenty years of age.

Mr. Smith: Many men get their scientific education after starting to get their experience.

Mr. Lees: Are they, then, specialising at the time that they are getting their general and scientific education?

The President said that the matriculation examination could be passed at seventeen, and seven years in addition to that would bring the age to twenty-four. During those seven years a man could obtain a splendid education, and all he would have to do would be to produce evidence of that. As Mr. Smith had pointed out, the arrangement only extended to the end of 1921, so that the question of the age limit really seemed to be not worth troubling about. The seven years' experience required by the resolution might be concurrent with the educational period

Mr. Lees said that this resolution appeared to be designed to admit to the Institute a number of men who, having supported the British Association of Chemists and paid their subscriptions to the Association, would naturally expect to get something in return. The President said that there was not the faintest evidence of that, while to assume that people who had spent so many anxious hours in considering this matter had missed a single one of the points that had been raised, would imply an unthinkable degree of folly and ignorance on the part of those who were endeavouring to guide the destinies of the Institute.

Mr. Lees then moved as an amendment that the age limit of twenty-seven years be re-introduced into the resolution.

Dr. Sidney Smith having seconded the amendment, it was put to the meeting and lost.

At the suggestion of Professor Baly it was agreed to insert in the resolution the words "without examination," as in the case of resolution II.

Mr. F. J. Lloyd asked whether it might not be desirable to delete the date from the resolution. It could be withdrawn at any time, while it might be desirable to extend the application of the resolution for a longer time.

The President thought that it was highly desirable that the date should remain. He then put the resolution to the meeting, with the addition above mentioned, and it was carried.

The President then moved the following resolution:—

IV. "That candidates who have not complied with the conditions specified under II. or III. immediately above, or with the Regulations adopted as a temporary (War) measure, be required to comply with the Regulations adopted and published by the Council in July, 1917."

Mr. A. Chaston Chapman said that he had much pleasure in seconding the resolution. He thought that it was generally agreed that the time had come when the Institute must be something more than a comparatively narrow qualifying

body, and must open its doors wider and march with the times. In doing that it was necessary that its constitution, or rather its examinations, should undergo some modification, and in pursuance of that policy, of which he thought nearly every member of the Institute approved, the Associateship of the Institute had come to mean perhaps something a little different from what it had meant until recently. In the future it would mean that an Associate had had a thorough general training in chemistry, but did not necessarily possess any special knowledge or special experience; it would, in fact, constitute a guarantee of good general chemical training to any member of the public who desired the services of a really competent, well-trained chemist. Then he thought that it was generally agreed—though this was a point upon which a good deal of doubt had been expressed—that the Fellowship must mean something very much more. Now the President had indicated that the hall-mark of the Fellowship should be practical experience and a high level of specialised knowledge. It was because he (Mr. Chapman) believed that this condition would be fulfilled by the Fellowship as granted in the future that he gave this resolution his most hearty and cordial support. He felt certain that the diploma of the Fellowship of the Institute would only be given to men whom the Institute would wish to see representing it in that capacity, i.e., to thoroughly well qualified professional and expert chemists. He personally (and he felt sure that the majority of the members of the Institute would take the same view) had protested, and would protest, with all the emphasis of which he was capable, against any attempt to whittle down the requirements of the Institute or to bring into the Institute any one who could not properly be described as a well-trained chemist. After all, the members of the Institute did represent professional chemistry to the public, and it was by the members of the Institute that the profession of chemistry was very largely judged; and if men who, excellent though they might be in many respects, had not perhaps had the advantage of a good general education, were going to be

admitted to the Institute and given the power to say to the public: I am a chemist—a member, or licentiate, or what not, of the Institute of Chemistry—that, he thought, would be doing something very seriously derogatory to the future welfare of the Institute. The Institute owed to the public a great responsibility, namely, the responsibility of guaranteeing to the public that a man who bore the stamp of the Institute should be a man who would not be guilty of incompetence or of chemical malpractice. Those were the considerations which induced him to support very heartily this resolution, and, indeed, all the resolutions which were before the meeting.

Sir William Tilden said that he had hoped to stay to propose a vote of thanks to Sir Herbert Jackson for his services in the chair. He had come to the meeting for the purpose of supporting the resolutions as a whole, as he felt it to be important that the present opportunity should be taken of enlarging the scope of the Institute and proceeding as far as possible towards that comprehensive scheme which would result in its including all competent chemists in the country. He felt that, for the future of the profession of chemistry, it was important that they should all stick together, and in order that they might do that it was very desirable that there should be as few malcontents as possible outside. Whenever a constitutional change was made it was obvious that the qualifications of candidates must be viewed with a lenient eye and in a liberal spirit, and he hoped that that spirit would pervade the deliberations of the Nominations and Examinations Committee and the Council generally when they came to administer these Regulations. It had been a source of great regret to all who had the welfare of the Institute at heart that there had been, up to the present, a number of admittedly competent men outside its ranks, and he very much hoped that the Regulations which were to be administered by the Council in the future would allow of the inclusion of a considerable number of those men.

One could talk a great deal about the past. This was not the first time that there had been great discussions in the Institute upon educational questions or upon the reasons which had kept so many men outside. It was not altogether that the young men had been reluctant to pay fees and pass examinations; it was not altogether the attitude of the older men. There had been a certain number of both classes—men who did not want to pay and did not want to be examined, and others who thought it beneath them. He hoped that in the future those people would be satisfied that their own best interests and the best service that they could render to the country in their professional capacity would be realised by their joining the Institute.

Lieutenant Evans suggested that the words "in the daytime" might be omitted from the Regulations relating to examinations.

The Registrar said that on page 14 of the Regulations of July, 1917, there was a special provision to meet the case of men who received their training at evening classes.

The President then put the resolution to the meeting, and it was carried.

The President then moved the following resolution:-

V. "That it is desirable that the list of Institutions recognised by the Council for the training of chemists should be reconsidered with a view to its further extension."

Professor Baly seconded the resolution, partly for the reason that, as a provincial man, he recognised the absolute necessity of the proposed revision as part of the new policy. There was no doubt that many institutions had sprung into fame, so to speak, of recent years, which were not specifically mentioned in the current Regulations, and he felt sure that

several of them would occur to any member of the Institute as examples of institutions which the Council should certainly consider as equal in standing to those already mentioned in the list. The remark on page 4 of the notice paper to the effect that steps would be taken towards closer co-operation between the work of the Institute and that of the universities and colleges was, in his opinion, very important, as indicating a highly proper policy on the part of the Council, and he was inclined to suggest that this would be a very good opportunity for the Council to consider the recognition of specific teachers in recognised institutions, in the same way in which the University of London recognised certain specific teachers in colleges situated in London. Possibly, indeed, that was what was really meant by the statement referred to; at any rate such recognition would show that the Institute took a cordial interest in the way in which chemistry was being taught. That also raised the point mentioned by Lieutenant Evans. because teachers of evening classes could be specifically recognised as well as teachers of day classes.

Mr. H. J. Bailey asked whether the suggestion as to evening classes would be treated as applying retrospectively in cases governed by resolutions II., III. and IV. If it did not, a good deal of injustice would be done to those previously trained in evening classes at recognised institutions.

The President thought that that might be safely left to the Council. Certainly the point must be taken into consideration, and any injustice must be avoided.

Mr. Lees moved the following amendment:-

"That it is desirable that the list of Institutions recognised by the Council for the training of chemists should be reconsidered with a view to its further extension, and that the recognition of those Institutions added to the list shall not take effect retrospectively to the date of their recognition."

As Prof. Baly had said, a number of institutions had sprung up of late years, whose standard of instruction was such as to entitle them to recognition. The reason for their previous non-recognition was obviously that their standard of education had not been sufficiently high.

The President: They are going to be recognised because they have evolved.

Mr. Lees asked whether training in such institutions prior to the date of their recognition would be recognised.

The President said that all such cases would be considered by the Council on their merits, and he thought that the Council might be trusted to see that no injustice was done. That meeting afforded a pretty good proof of the confidence of the Institute in its Council, for the Institute would not otherwise be in the position of being able to speak to its members about becoming the great organising body for the profession of chemistry.

Mr. Lees said that if an institution had not been recognised in the past it was presumably because its standard was not equal to the requirements of the Institute. If it had evolved more recently, its recognition might well be allowed to take effect merely from the present time.

The President said that in some cases that might involve injustice.

Mr. Bracewell seconded the amendment, which, on being put to the meeting, was lost.

The resolution was then put to the meeting and carried.

The President then moved the following resolution:—
VI. "That it is desirable that local sections of the Institute be formed in important centres where a mem-

bership of not less than forty can be assured, the main objects of such sections to be to maintain the interest of the members in the general welfare of their profession and to promote social intercourse."

Mr. J. H. Lester seconded. He thought it would be agreed that this was perhaps the most popular motion on the agenda, at any rate, with the country members of the Institute. There would have to be some discussion as to the particular means to be taken to carry out the proposal, but at any rate it indicated that it was the intention of the Council to seek the advice and assistance of those members who were outside London.

Captain Foster supported the resolution on behalf of the members in the North Eastern area. He felt sure that a great amount of good would accrue from the formation of these sections. A large amount of useful discussion would take place, and the sections would be able to put forward their own representatives for election to the Council, so that the general body of members would feel that their views were being duly voiced in the Council at headquarters.

Mr. B. D. Porritt welcomed this proposal on behalf of the Scottish members. He had discussed it personally with the Registrar three or four years ago, but unfortunately it did not then mature, probably owing to the conditions brought about by the war. The recent discussions on the work of the Council had aroused a great deal of interest in both Edinburgh and Glasgow and, speaking as one who was at first rather alarmed at the Council's proposals, he could testify to the value which such local meetings possessed. They had had addresses by Dr. Lauder in Edinburgh and Prof. Henderson in Glasgow, which made the position of the Council perfectly clear, and he thought it might be said that the Council to-day had the almost unanimous support of the Scottish members.

Mr. W. T. Burgess said that, although it had not been put definitely before the meeting, the formation of these sectional bodies of members would have the effect of improving the value of the Institute in regard to the resolution which had just been passed, in that the Council could look to the local sections for information as to institutions not at present recognised. One of the difficulties that had been experienced during the last few years had been to get inquiries made on behalf of the Council with regard to such institutions. So me four or five years ago a list which was put before the Council had had to be laid aside owing to that very difficulty. The new local sections would be able to help the Council very much in that direction.

The President said that a good deal of provisional work had already been done with regard to the formation of local sections. The rules for them were practically ready, and he understood that arrangements were being made for the formation of sections for Manchester, Glasgow, Liverpool, Gretna, the North East Coast, Edinburgh and Yorkshire.

The resolution, on being put to the meeting, was carried.

The President then moved:-

VII. "That it is desirable that steps be taken to revise the present system for the election of the Council, in order to give the general body of members greater freedom of nomination and election, with a view to securing representation from different localities and from different branches of the profession."

Captain Foster seconded, and the resolution was carried.

The President said that on his own behalf and on behalf of the Council he desired to express their thanks and gratitude to those members who had come to this meeting, many of them from far distant places and at considerable personal inconvenience, and who had, both by their criticisms and by their support, materially helped in the prompt and successful carrying out of the business of the meeting.

Majo: Leather proposed a hearty vote of thanks to Sir Herbert Jackson for taking the chair at that meeting. The difficulties of such a meeting were very considerable, and they were very grateful to Sir Herbert for the able manner in which he had controlled the proceedings.

The motion was seconded by Mr. Ridsdale, supported by Colonel Smithells, and carried by acclamation.

The President having expressed his acknowledgment, the proceedings terminated.

Local Sections of the Institute.

In accordance with Resolution VI. passed at the Extraordinary General Meeting of the Institute, held on April 27th, the Council have framed the following Draft Rules for the formation of Local Sections. Applications for the formation of Local Sections should be forwarded to the Registrar.

DRAFT RULES FOR LOCAL SECTIONS.

Provisionally adopted by the Council of the Institute, May 31st, 1918.

GENERAL RULES.

I. For the further organisation of the Institute and the promotion of its objects, as well as to maintain the interest of the Fellows and Associates in the general welfare of their profession and of the Institute and to promote social intercourse among them, the Council will be prepared to receive applications for the formation of Sections in Great Britain and Ireland, in the British Dominions beyond the Seas and in the Empire of India.

- 2. Applications for authority to form Sections shall be made to the Council in writing. Such applications shall be signed by five or more Fellows of the Institute, and shall set forth the evidence required by these Rules.
- 3. The Rules relating to Sections shall be approved by the Council of the Institute, and shall be adopted by all new Sections on their formation.
- 4. Before a Section can be formed, it will be necessary for the Fellows and Associates interested to be in a position to satisfy the Council that the initial Membership of the Section will not be less than thirty for any centre in Great Britain or fifteen for any centre in Ireland or abroad.
- 5. Only Fellows and Associates of the Institute shall be eligible for election as Members of Sections.
- 6. Powers will not be conferred on any Section to grant diplomas. Such powers shall remain exclusively vested in the Council of the Institute.
- 7. A Section shall not be empowered to act in the name of the Institute or negotiate or act in any matter of public importance affecting the interests of chemists or of the Institute, unless specially authorised by the Council.
- 8. The Management of a Section shall be vested in a number of its Members, chosen for the purpose, who shall act as the Local Committee for the Section.
- 9. The Council of the Institute may, on request from the Committee of a Section stating sufficient reasons, waive compliance with or allow the alteration of any Section Rule, and may sanction the passing by a Section of such special Rule or Rules applicable to the particular circumstances of such Section as may be considered necessary by the Section and as may be approved by the Council of the Institute.

SECTION RULES.

Section Rules must be approved by the Council of the Institute under Rule 3 of the General Rules above.

(The blank spaces in the following Draft Rules will be filled in -

later.)

I. Title and Constitution.

The Section shall be known as "The Section of the Institute of Chemistry of Great Britain and Ireland," and it shall be constituted in conformity with the Charter and Bye-Laws of the Institute.

2. Objects of the Section.

The objects are :-

- (a) To create a local organisation for Fellows and Associates of the Institute; to maintain the status and advance the interests of the profession of chemistry; to afford opportunities for intercourse amongst the Members; to arrange conferences and the delivery of lectures; and to provide for the acquisition and dissemination of useful information connected with the profession, and the work of the Institute.
- (b) To give information to candidates desirous of joining the Institute; to report to the Council of the Institute, when requested, on applications from suchcandidates; and to provide for assistance, if desired by the Council, in the supervision of local examina-

tions of the Institute.

(c) To advise the Council with respect to matters of local professional interest.

(d) To report to the Council on the transactions of the Section with a view to publication in the Proceedings of the Institute,

(e) To co-operate with the Registrar in connection with the Appointments Register of the Institute.

(f) When found practicable, to form a Library or Museum, or both.

3. Management of the Section.

The management of a Section shall be vested in a Committee which shall be elected at the first General Meeting of the Section, and shall consist of not less than five Members. The Committee shall determine its quorum, and shall have power to fill up any casual vacancies that may arise. Any Member of the Section Committee so elected to a casual vacancy shall remain in office for so long only as his predecessor would have held office.

4. Officers.

The Committee shall, out of their own number, elect a Chairman, and a Treasurer, and shall have power to fill up any casual vacancies that may arise in such offices. The Section shall also appoint a Secretary.

5. Section Committee, Election and Retirement.

One-third of the Members of the Committee, or the nearest number thereto not exceeding one-third, shall retire in rotation each year, but shall be eligible for re-election without re nomination for three years, after which one-third shall be ineligible for re election until after the lapse of one year. Nominations for election on the Committee signed by two Members must be lodged with the Secretary days before the Annual General Meeting. The names of those nominated shall be notified to the Members days before such Meeting. The election shall be by ballot.

6. Finances.

(The question of Finances will be considered later.)

7. Envolment of Members, Suspension and Cesser of Membership.

(a) The Membership shall be limited to Fellows and Associates of the Institute. Any Fellow or Associate desirous of joining a Section shall notify in writing the Secretary of his desire so to do, and shall undertake to abide by the Rules of the Section.

- (b) Any Member of the Section ceasing to be a Fellow or Associate of the Institute shall thereupon cease to be a Member of such Section.
- (c) No Fellow or Associate shall be a Member of more than one Section.

8. Ordinary Meetings.

Ordinary meetings of the Section shall be held at such times (at least once in every quarter) and places as the Committee may appoint. The Chair shall be taken by the Chairman of the Committee, or if he be absent the Members shall elect a Chairman for the occasion. At the discretion of the Committee, Students in the locality and other visitors may be invited to attend meetings, but shall have no voting powers.

o. Annual General Meeting.

The Annual General Meeting of Members shall be held in the month of to receive the Report and Financial Statement for the preceding Session; to elect Members of the Section Committee and Auditors for the ensuing year; and to transact any other necessary business.

10. Special Meetings.

By resolution of the Committee, or upon a requisition of Members of the Section, the Secretary shall convene a Special Meeting by a notice headed "Special Meeting" stating fully the object for which it is called. Every such meeting shall be held within days from the passing of such resolution or the receipt of such requisition.

II. Notices.

At least days' notice of all meetings shall be given to each Member concerned.

12. Quorum.

The Committee shall have power to determine the quorum for meetings of the Section.

13. Minutes.

The proceedings of the Section shall be recorded by the Secretary in books kept for the purpose; such books shall be open to the inspection of Members of the Section at such times as the Committee may permit. The minutes or a copy thereof shall be available at any time to the Council or their accredited representatives.

14. Accounts.

The Treasurer shall keep proper accounts which shall be made up to the day of of each year. Such accounts, when duly certified by the Auditors, shall be laid before the Annual General Meeting with the Report and Financial Statement of the Committee.

15. Funds.

The Funds shall be under the control of the Committee, and accounts shall be paid by the Treasurer when duly authorised by the Committee. All cheques shall be signed by the Treasurer and one other Member appointed by the Committee.

16. Rules: Alteration of, or Dispensation from Compliance With.

Any proposal as to the alteration of Section Rules or as to the passing of special Rules applicable to the circumstances of a particular Section, or for dispensation from compliance with any of the Section Rules, must be submitted to the Council of the Institute. Such proposals, when approved, must be submitted for adoption at the next Annual General Meeting, or at a Special General Meeting of the Section called for that purpose.

17. All disputes arising under these Rules shall be referred to the Council of the Institute, whose decision in such matters shall be final.

FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERV-ING OR WHO HAVE SERVED WITH H.M. FORCES.

(SUPPLEMENTARY LIST.)

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

FELLOWS.

Greenwood, H. C., Lieut. R.N.V.R. Henley, The Hon. F. R., Captain. McDavid, J. W., Captain R.F.A.

ASSOCIATES.

Brown, I. V., Cadet O.T.C.

Crundall, S. F. W., Special Brigade R.E. Eastick, A. G., King Edward's Horse.

Eastick, J. C. N., Captain, Commandant, Irish Command Anti-Gas School. Farmer, E. H., Lieut. Loyal North Lancashire Regiment.

Ferlie, R., Special Brigade R.E.

Gaskell, S., Lieut. R.E.

Haigh, T., Lieut. Royal Dublin Fusiliers. (Mentioned in despatches.)

Hastilow, C. A. F., Sergeant, Special Brigade R.E.

Heasman, B. R., Sergeant R.E.

Hobson, A. B., Captain, Commandant, Gas School.

Jobling, E., Captain R.E. Jones, J. I. M., O.T.C.

Kay, H. D., Temp. Captain, Commandant, Command Gas School. (Mentioned in despatches.)

Laughton, E. M., Trooper, South African Mounted Rifles.

Marshall, F. W. D., R.A.M.C.

Messenger, W. G., Special Brigade R.E.

Nobbs, H., Captain, Northamptonshire Regiment.

Page, H. J., Captain R.F.A. (Twice mentioned in despatches.) Powell, David, Captain R.E., Divisional Gas Officer.

Reeves, G., 2nd Lieut. I.W.T.

Taylor F., Lieut. R.E.

Tryhorn, F. G., Sub-Lieut. R.N.V.R.

Wilkie, A. L., Captain Yorks. and Lancs. Regiment. (Mentioned in despatches.)

STUDENTS.

Dawn, T. S., Special Brigade R.E.

Hill, W. R., Cadet O.T.C. Ritchie, W. S., R.N.A.S.

Since the publication of the List given in Proceedings, Part II., 1918, entries have been altered in the following cases:—

FELLOWS.

Bassett, F. L., Captain, Royal West Kent Regiment.
Davis, O. C. M., Captain R.A.M.C.
Gimingham, C. T., Captain R.E.
Masters, E. A., Major A.S.C. (M.C.).
McCombie, H., Major, Chemical Adviser. (D.S.O.; mentioned in despatches.)
Smeaton, T. F., Lieut., Scottish Rifles attached R.E. (Ministry of Munitions.)

ASSOCIATES.

Marples, M. E., Major, A.S.C. Reynard, H. C., Captain, Chemical Adviser. Sewill, J. W., Lieut. Special Brigade, R.E. Stickings, R. W. E., Captain R.A.M.C. Sugden, J. N., Captain R.E. Wynn, W. O. R., 2nd Lieut. R.E.

STUDENTS.

Buttrick, H. P., Lieut. R.E. Olifford, P. H., Lieut. R.A.F. Norman, D. J., 2nd Lieut. R.G.A. Print, H. C., 2nd Lieut. R.A.F. Roberts, E. J., Sub-Lieut. R.N.V.R. Taylor, A. J., 2nd Lieut., Royal Artillery. Waters, P. W., Lieut. R.E.

The Register.

Since the publication of Proceedings, Part I., in February, 1918, the Council have elected 23 new Fellows and 97 new Associates; 20 Associates have been elected to the Fellowship, and 22 Students have been admitted.

The death of 6 Fellows, I Associate, and I Student has been reported.

New Fellows.

- Ardern, Edward, D.Sc. (Manc.), Prior's Lee, Urmston, nr. Manchester.
 (Chief Chemist and Technical Adviser to Manchester Corporation Sewage Works. Research.)
- Bowles, Bertram Hennessey, Overdale, Eastwood Road, South Woodford, London, E. 18. (Finsbury Technical College; Technical Chemist, Messrs. W. J. Bush & Co.)
- Christie, John, H.M. Factory, Pembrey, Carmarthenshire. (Assistant Works Manager.)
- Eastaugh, Frederick Alldis, B.Sc. (Lond.), A.R.S.M., H.M. Factory, Gretna, Scotland. (Lecturer and Demonstrator, University of Sydney. Research.)
- Everest, Arthur Ernest, D.Sc. (Birm.), Mossville, Gledholt Road, Huddersfield. (Head of Dept. Coal-tar Colour Industry, Technical College, Huddersfield. Research.)
- Ewan, Thomas, M.Sc. (Vict.), Ph.D. (Munich), 12, Kelvin Drive, Glasgew. (Chief Chemist, Cassel Cyanide Co. Research.)
- Fagan, Thomas Wallace, M.A. (Cantab.), 13, George Square, Edinburgh. (Assistant Lecturer and Demonstrator, Edinburgh and E. of Scotland College of Agriculture. Research.)
- Ford, John Simpson, 7, Corrennie Drive, Edinburgh. (Chemist, Messrs-William Younger & Co. Publications.)
- Greaves, Richard Henry, M.Sc. (Wales), B.Sc. (Lond.), 3, Lydford Road, Westeliff, Essex. (Assistant Lecturer and Demonstrator in Metallurgy, University College, Cardiff. Research.)
- Greenwood, Lieut. Harold Cecil, D.Sc. (Manc.), M.I.D. Research Laboratories, University College, Gower Place, London, W.C. 1. (Research, Munitions Inventions Department. Patents.)
- Hodsman, Henry James, M.Sc. (Leeds), 42, Richmond Mount, Headingley, Leeds. (Lecturer in Gas Chemistry, Leeds University. Research.)
- Holt, Alfred, M.A. (Cantab.), D.Sc. (Manc.), Dowsefield, Allerton, Liverpool. (Lecturer and Demonstrator, Liverpool University. Research.)

- Ibbotson, Fred., B.Sc. (Lond.), A.R.C.S.I., 99, Bower Road, Sheffield (Senior Lecturer in Metallurgical Chemistry, University of Sheffield. Publications.)
- James, Thomas Campbell, M.A. (Cantab.), D.Sc. (Wales), Val Solda, Caradoc Road, Aberystwyth, Wales. (Lecturer in Chemistry, University College, Aberystwyth. Research and Publications.)
- MacLean, Mrs. Ida Smedley, D.Sc. (Lond.), Parts I. and II., Nat. Sci. Tripos (Cantab.), 68, Overstrand Mansions, Battersea Park, London, S.W. 11. (Lecturer in Chemistry, University of Manchester. Research and Publications.)
- Masson, Professor David Orme, M.A., D.Sc. (Edin.), F.R.S., The University, Melbourne, Australia. (Professor of Chemistry, University of Melbourne. Research and Publications.)
- May, Percy, D.Sc. (Lond.), Organic Chemical Laboratory, South Parks Road, Oxford. (Research Chemist, Messrs. W. J. Bush & Co. Publications.)
- McDavid, Captain James Wallace, R.F.A., M.Sc. (Vict.), D.Sc. (Edin.), H.M. Factory, Pembrey, Carmarthenshire. (Research Chemist, Nobel's Explosives Co.)
- Mott, Owen Edwin, O.B.E., Ph.D. (Heid.), H.M. Factory, Oldbury, Birmingham. (Head of Research Department, H.M. Factory, Oldbury, Publications.)
- Newbery, Edgar, B.Sc. (Lond.), D.Sc. (Vict.), Electro-Chemical Dept., The University, Manchester. (Demonstrator and Lecturer in Electro-Chemistry, University of Manchester. Research.)
- Pinnock, Henry Tremayne, M.A. (Oxon.), 11, Fountain Road, Edgbaston, Birmingham. (Chief Chemist and Works Manager, South Staffordshire Mond Gas Co. Research.)
- Whiteley, Miss Martha Annie, O.B.E., D.Sc. (Lond.), 111, Castlenau, Barnes, London, S.W. 13. (Lecturer in Organic Chemistry, Imperial College of Science and Technology. Research.)
- Wilson, Leonard Philip, F.C.G.I., Rosemont, Holyhead Road, Coventry. (Chemist, Messys. Courtaulds, Ltd. Research; Patents.)

Associates Elected to the Fellowship.

- Carlos, Arthur Sydney, B.Sc. (Lond.), 42, Foxley Road, North Brixton, London, S.W.
- Cartwright, Thomas Turnel Frank, B.Sc., A.R.C.S. (Lond.), 6, Station Read, Stowmarket, Suffolk.
- Christie, 2nd Lieut. John Hugh, B.Sc. (Lond.), c/o Dr. Bean, Crossgates, Leeds.
- Crawford, John, 76, Forsyth Street, Greenock.
- Garland, Arthur Edward, B.Sc., A.R.C.S. (Lond.), Chemical Dept., Royal Arsenal, Woolwich, London, S.E. 18.

Hamilton, Gavin, 18, Claremont Road, Rugby.

Harding, Gilbert, 85, Greenvale Road, Eltham, London, S.E. 9.

Harm worth, Walter Pierpoint, Chagford, Ruskin Road, Carshalton, Surrey.

Hembrough, James, A.R.C.S., Principal, Newton Abbot Secondary School, Market Street, Newton Abbot, Devon.

Illingworth, Lieut. Stewart Roy, A.R.C.S., Fern Villa, Chesham Bois, Bucks.

James, Cuthbert William, M.Sc. (Wales), Much-y-don, Burry Port, Carmarthenshire.

Levy, Stanley Isaac, B.A. (Cantab.), B.Sc. (Lond.), 9, Parkhurst Road, Holloway, London, N. 7.

Masters, Major Edgar Alan, M.C., B.Sc. (Lond.), 94, Knightsbridge, Lenden, S.W. 1.

Mocatta, Ethel Grace, B.Sc. (Lond.), 49, Hamilton Terrace, London, N.W. 8, Naunton, William Johnson Smith, M.A. (Cantab.), M.Sc. (Lond.), Dip. Chem. (Munich), c/o Messrs. Levinstein, Ltd., Blackley, Manchester.

Rideal, Lieut. Eric Keightley, B.A. (Cantab.), Ph.D. (Bonn), 28, Victoria Street, London, S.W. 1.

Shulman, Harry, B.Sc. (Lond.), 21, Tredegar Square, Bow, London, E. 3. Smeaton, Lieut. Thomas Frederick, 15, Ormonde Avenue, Muirend, nr. Glasgow.

Wilson, Thomas Alexander, 91, New Road, Ayr.

Yeoman, Ernest Wickham, B.Sc., A.R.C.S. (Lond.), A.R.S.M., 1, Regent Square, London, W.C. 1.

New Associates.

Elected under the special provisions of the Regulations adopted by the Council, July, 1917.

S. = Naval, Military, or Air Service. M. = Munitions.

I.I. = Passed the Intermediate Examination of the Institute.

Aubrey, Thomas Emrys, B.Sc. (Wales), Cambrian House, Llansadwm, Llanwrda, S. Wales. [M.]

Bainbridge, James Roland, M.Sc. (Manc.), Inglenook, Arklow. Co. Wicklow. [M. Research.]

Bentley, Frank Thomas, B.Sc. (Birm.), 2, Kilmeny Terrace, Ardrossan, Ayrshire. [M.]

Berry, Edgar, B.Sc. (Manc.), 73, Bowden Road, Garston, Liverpool. [Research; Drugs.]

Beynon, Edgar Mostyn, B.Sc. (Wales), 26, Glevering Street, Llanelly, Carmarthenshire. [M.]

Birse, William Milne, M.A., B.Sc. (Aberd.), 68, Bowden Road, Smethwick, Staffs. [M.]

- Blackler, Montague Bennett, Ph. D. (Würzburg), 8, Higham Station Avenue, South Chingford, E. 4. [Motor Fuel.]
- Brown, Ivor Vernon, B.Sc. (Wales), Woodbine Villa, Ferryside, Carmarthenshire. [M.]
- Brownlee, George, B.Sc. (Edin.), Royal College of Science for Ireland, Dublin. [Assistant Lecturer in Agricultural Chemistry, Royal College of Science for Ireland, and Assistant to Chief Agricultural Analyst for Ireland.)
- Burgess, William Ernest, B.Sc. (Vict. and Leeds), Alpine House, 30, Springdale Avenue, Huddersfield, Yorks. [M.]
- Chatt, Eileen Mary, B.Sc. (Lond.), 60, Claverton Street, Westminster, London, S.W. 1. [Govt. Lab.]
- Clarke, Frederick George, B.Sc. (Lond.), 27, Ashlone Road, Putney, London, S.W. 15. [S.]
- Cory, Harold Edward John, M.Sc. Tech. (Manc.), 7, Oxford Avenue, Bootle, Liverpool. [M. Lead Products.]
- Crockatt, Arthur John, M.Sc. (Leeds), The Hollies, Old Park Road, Roundhay, Leeds. [M.]
- Crundall, Sydney Francis William, 28, Marlborough Hill, Harrow, Middlesex. [Finsbury Tech. Coll.; M.; S.]
- Davies, William Morley, B.Sc. (Birm.), Dalton Grange, Huddersfield. [Dyes.]
- Dean, Harry Fitz-Gibbon, M.Sc. (Bris.), 57, Ashley Road, Bristol. [Alkali.] Dodgson, John Wallis, B.Sc. (Lond.), University College, Reading. [Lecturer in Chemistry, University College, Reading. Research and Publications.]
- Downing, James, B.Sc. Tech. (Manc.), Wendover, 14, Cyprus Avenue, Finchley, London, N. 3. [Research.]
- Dymond, Francis John, B.Sc. (Bris.), 6, Lockyer Street, Plymouth. [M.] Eastick, Arthur Gerald, 2, Staff House, Eastriggs, Dumfriesshire. [Finsbury Tech. Coll.; S.; M.]
- Eastick, Captain John Clare Newlands, 137, Upper Clapton Common, London, E. 5. [Finsbury Tech. Coll.; S.]
- Farmer, Lieut. Ernest Harold, B.Sc. (Lond.), The Heath, Shackerstone, Nuneaton. [S.]
- Ferlie, Robert, B.Sc. (Edin.), The Anchorage, Auchtermuchty, Scotland. [S.; M.]
- Fletcher, James, M.Sc. (Vict.), 9, Church Circle, S. Farnborough, Hants.
 [M.; Research.]
- Gant, Thomas Harold, A.R.C.S. (Lond.), 4, Victory Avenue, H.M. Factory, Gretna, Dumfriesshire, [M.]
- Gaskell, Lieut. Sam, B.Sc. (Vict.), Highfield, Buxton Road, Macclesfield.
- Geake, Arthur, M.Sc. (Bris.), No. 1, Staff House, Eastriggs, Dumfriesshire. [S.; M.; Research.]

Geary, Samuel Thomas Talmage, B.A. (Cantab.), 33a, Sparkenhoe Street, Leicester. [M.]

Griffiths-Jones, Ernest, M.Sc. (Manc.), Public Health Laboratory, Cairo, Egypt. [Research.]

Haigh, Lieut. Thomas, B.A. (N.U.I.), A.R.C.S.I., 77, Grove Park, Rathmines, Dublin. [S.; mentioned in Despatches.]

Hartley, John Alfred, M.Sc. (Leeds), Cowick Grange, Snaith, Yorks.
[Brewing; Antiseptics.]

Hastilow, Cyril Alexander Frederick, B.Sc. (Birm.), 162, Brighton Road, Moseley, Birmingham. [S.; M.]

Heasman, Benjamin Richard, B.Sc. (Lond.), Rutherglen, Throwley Road, Sutton, Surrey. [S.; M.; Research.]

Hill, James, B.Sc. (Leeds), 17, Birch Road, Crumpsall, Manchester. [Research.]

Hobson, Captain Arthur Bertram, M.Sc. (Vict.), Chemical Adviser, B.E.F. [S.]

Hughes, Ellis, B.Sc. (Wales), Pemberton Stores, Burry Port, Carmarthenshire. [M.]

Hughes, Robert John, B.Sc. (Wales), H.M. Factory, Pembrey, Carmarthenshire. [M.]

Jakeman, Alfred Thomas, B.A. (Oxon), 104, Vicarage Road, Smethwick, Birmingham. [M.; Research.]

Jefferis, Arthur Tarlton, B.Sc. (Adelaide), H.M. Factory, Langwith, Derbyshire. [M.]

Jenkins, John Barclay, M.A., B.Sc. (Edin.), Lea Park, Perth Road, Blair-gowrie. [M.]

Jobling, Captain Edgar, B.Sc. (Lond.), 220, Marlborough Avenue, Hull. [S.; Research.]

Johnstone, Sydney James, B.Sc. (Lond.), Rousdon, Clifford Road, New Barnet, Herts. [Research and Publications.]

Jones, Glyn, B.Sc. (Wales), Belmont, Gowerton, nr. Swansea. [M.]

Kay, Temp. Captain Herbert Davenport, B.Sc. (Vict.), 85, Grenville Street, Stockport. [S.; mentioned in Despatches.]

Kay, William Marriott, M.Sc. (Liv.), 15, Hampstead Road, Elm Park, Liverpool. [M.]

Kenyon, James, B.Sc. (Vict.), 270, Denton's Green Lane, St. Helens, Lancs.

Kirkwood, Thomas Williamson, B.Sc. (Dun.), Brooklyn, Guildford Road, Farnborough, Hants. [M.]

Knibbs, Norman Victor Sydney, B.Sc. (Melbourne), H.M. Factory, Langwith, nr. Mansfield, Derbyshire. [M.]

Lacell, Maurice Noel, B.Sc. (Lond.), Hamstals, Lansdowne Road, Finchley, London, N. 3. [Chemist and Works Manager, Standard Ammonia Co., and London Phosphate Syndicate.]

- Laughton, Edmund Mainwaring, B.A. War (Cape of Good Hope), c/o Rev. N. G. Theodosius, Sandown, Rowley Avenue, Stafford. [S.; M.; Research.]
- Laxton, Sub-Lieut. Frank Charles, B.Sc. (Lond.), High Street, Ely, Cambs. [S.]
- Le Brocq, Leurence Francis, B.Sc. (Lond.), Akender, Guildford Road, South Farnborough, Hants. (S.; M.; I.I.)
- Leigh, Alfred John, B.Sc. (Lond.), A.R.C.S., H.M. Factory, Pembrey, Carmarthenshire. [M.]
- Leigh, Walter Norman, M.Sc. Tech. (Manc.), 2, Kilmeny Terrace, Ardrossan, Ayrshire. [M.]
- Littlejohn, Malcolm, M.A., B.Sc. (Glasgow), Easter Hallhill House, Baillieston, Lanarkshire. [M.]
- Lundholm, Nils Olof, Bryn Glas, 53, Queen Victoria Road, Llanelly, S. Wales. [Central Technical College. [M.]
- Murshall, Frederick William Dyson, M.A. (Cantab.), M.Sc. (Manc.), 46, Denison Road, Ealing, London, W. 5. [S.]
- McLean, Wilfrid, B.A., B.Sc. (N.U.I.), A.R.C.S.I., H.M. Factory, Queensferry, nr. Chester. [M.]
- Messenger, Walter George, B.Sc. (Birm.), 107, Tindal Street, Balsall Heath, Birmingham. [S.; M.]
- Meston, William, M.A., B.Sc. (Aberd.), Southcote, Ardrossan Road, Saltcoats, Ayrshire. [M.]
- Moore, Robert Charles, M. A., M.Sc. (Liv.), 25, Galloway Road, Waterloo, Liverpool. [M.]
- Nobbs, Captain Howard, B.Sc. (Lond.), Inglewood, Claremont Grove, Woodford Green, Essex. [S.; M.]
- Page, Captain Harold James, B.Sc. (Lond.), 33, Hatherley Road, Sideup, Kent. [S.; twice mentioned in Despatches; Research; M.]
- Patterson, William Hamilton, M.Sc. (Manc.), 19, Portland Road, Edgbaston, Birmingham. [M.; Research.]
- Powell, Captain David, B.Sc. (Wales), Broniwan, Rhydlewis, Henllan, Cardiganshire. [S.]
- Punter, Ronald Arthur, B.Sc. (Lond.), 123, The Grove, Ealing, London, W. 5. [M.]
- Radford, George Daniel, B.Sc. (Lond.), 30, Thornycroft Road, Portsmouth.
- Reeves, 2nd Lieut. George, B.Sc. (Lond.), A.R.C.S., D.I.C., Stoneleigh, 1, Cambridge Road, Huddersfield. [M.; S.]
- Regan, Colston James, B.Sc. (Lond.), 14, Penerley Road, Catford, London, S.E. 6. [S.; I.I.]
- Reynard, Captain Herbert Corner, B.Sc. (Lond.), 38, Ravensdale Mansions Grouch End, London, N. 8. [S.; I.I.]

Ritchie, John Edwin, M.A., B.Sc. (Aberd.), 12, Bedford Place, Aberdeen. [Food and Drugs.]

Robertson, Robert Boswell, B.A. (Cape of Good Hope), 6, Gleucester Crescent, Regent's Park, London, N.W. 1. [M.]

Robinson, Miss Rona, M.Sc. (Manc.), Moseley Villa, Metford Road, Withington, Manchester. [Dyes; Research.]

Sewill, Lieut. John Waterlow, B.A. (Cantab.), 15, Russell Road, Whalley Range, Manchester. [S.; M.; I.I.]

Shankie, James, B.Sc. (Glas.), 150, Moorbottom Road, Thornton Lodge, Huddersfield. [M.; Research.]

Shepherd, Douglas Howard, B.Sc., M.A. (Vict.), 46, Trafalgar Road, Pendleton, Lancs. [M.; Dyes.]

Slater, James Cumming, B.Sc. (Edin.), 43, Crosswell Road, Langley, Birmingham. [M.; Research.]

Stansfield, John Firth, A.R.C.S., c/o The Bethlehem Steel Co., South Bethlehem, Penna., U.S.A. [M.]

Stickings, Captain Ralph William Ewart, B.Sc. (Lond.), D.I.C., Soudley House, Wandle Road, Morden, Mitcham, Surrey. [S.; Research.]

Stokes, William Henry, 2, Lydgate Road, Coventry. [Finsbury Tech. Coll. Cellulose; Research.]

Stringfellow, William Arthur, 7, Glenalla Road, Llanelly, Carmarthenshire. [King's Coll., London; Univ. Coll., Aberystwyth; M.]

Stubbs, Charles William Oswald, B.Sc. (Melbourne), c/o The High Commissioner for Australia, Australia House, Strand, London, W.C. 2. [M.]

Stutterd, Lancelot Frederick Norman, B.Sc. (Tasmania), Staff Quarters, Sark Bridge, H.M. Factory, Gretna, Scotland. [M.]

Taylor, Lieut. Francis, B.Sc. (Vict. and Leeds), Westgate House, North Cave, East Yorks. [S.]

Thompson, Guy Maurice, B.Sc. (Lond.), 30, Hartley Road, Nottingham.

Trotter, John Robert, A.R.C.S., Barking Chemical Co., Ltd., Crecksmouth Road, Barking, Essex. [M.; Research.]

Tryhorn, Sub-Lieut. Frederick Gerald, M.Sc. (Liv.), 45, Hallville Read, Mossley Hill, Liverpool. [M.; S.]

Welch, Marcus Baldwin, B.Sc. (Sydney), No. 1 Staff House, Eastriggs, Dumfriesshire. [S.; M.; Research.]

Whitaker, Roland Stead, B.Sc. (Sheff.), 6, Eglinton Street, Saltecats, Ayrshire. [M.]

Wilkie, Captain Arthur Leslie, 6, Wellington Villas, Arundel Street, Nottingham. [S.; mentioned in Despatches.]

Wilson, Captain Donald Major, M.C., B.Sc. (Lend.), 30, Morten Gardens, Wallington, Surrey. [S.; mentioned in Despatches; Chevalier, Cidre de la Couronne; Croix de Guerre.]

Wiseman, Harry, M.A., B.Sc. (Aberd.), 95, Sycamore Road, Smethwick, nr. Birmingham. [M.]

Wolfe, Harold Maurice, M.Sc. (Leeds), Cliff Lawn, Cliff Road, Hyde Park,

Leeds. [Research; M.]

Wright, Charles, B.Sc. (Leeds), A6, Staff Quarters, Eastriggs, Dumfriesshire, [M.]

Young, William, M.A., B.Sc. (St. Andrews), Toorak, South Beach, Saltcoats, Ayrshire, [M.]

New Associate.

(By Examination.)

Hicks, Cedric Stanton, M.Sc. (Otago), Ravensbourne, Dunedin, New Zealand.

New Students.

Asdell, Sydney Arthur, 72, Lansdown Road, Handsworth, Birmingham.

Awcock, George Alec, 26, Blenheim Crescent, South Croydon.

Barklie, Robert Henry Douglas, Penton Lodge, Old Lodge Lane, Purley, Surrey.

Blakey, Robert Fitzjohn Wood, c/o The United Alkali Co., Allhusen Works, Gateshead, Durham.

Brown, Laslie Gilbert, 6, Airlie Gardens, Ilford, Essex.

Dawkins, David Richard, 6, Llantivet Street, Cardiff; and Llwyncelyn, Skewen.

Dawn, Pioneer Thomas Sydney, 21, Belsize Square, Hampstead, London, N.W. 3.

Fisher, Elias, 4, Havering Street, London, E. 1.

Fuller, Charles Hubert Francis, 43, Lavender Vale, Wallington, Surrey.

Hoslop, Honry Mid lleton, Iffloy, Tregolls Road, Truro, Cornwall.

Hill, Cadet William Robert, Ship Hotel, Flottergate, Grimsby.

Horn, Alfred Hanry, 683, Barking Road, Plaistow, London, E. 13.

Kelby, Herbert John, 148, Olive Road, Cricklewood, London, N.W. 2.

Lowndes, Arnold Bradley, 10, Torrington Square, London, W.C. 1.

Malan, Pierre Simond, Merindol, Alexandra Avenue, Orangezieht, Cape Town, South Africa.

Mendel, Lazarus, 25, Broadway, West Ealing, London, W. 13.

Newcombe, Vera, 65, Southfield Road, Middlesbrough.

Page, Arthur Reginald, 63, Walford Road, Sparkbrook, Birmingham.

Whitby, William Henry, 127, Mersey Road, Widnes, Lancs.

Williamson, Annie, 1, Hughenden Terrace, Garstang Road, Preston.

Winch, Hope Constance Monica, Brompton Vicarage, Northallerton.

Wright, Eva Muriel, 141, Mitcham Lane, Streatham, London, S.W. 16.

DEATHS.

Fellows.

Captain and Adjutant James Scott Bainbridge, B.Sc. (Leeds) (died en service),

Thomas Farries.

David Smith Jardin, A.R.C.S.

Thomas Watson Lovibond.

Sir Alexander Pedler, C.I.E., F.R.S.

Herbert Wallace Roberts, M.B.E., B.Sc. (Lond.).

Alfred Gordon Salamon, A.R.S.M., Hen. Treasurer.

Frederick William Streatfeild.

Associate.

2nd Lieut. George William Moore (killed in action).

Student.

Captain Allan Robert Steele, M.C. (died of wounds).

General Notices.

Examinations.—An examination in Biological Chemistry, Bacteriology, etc., will commence on Monday, October 21st, 1918.

The list of candidates for this examination will close on

Tuesday, September 10th, 1918.

Full information can be obtained from the Registrar.

The Chemical Technology Examination Board will be prepared to hold an examination in October next. The exact date will be announced later.

The list of candidates will close on Tuesday, September 10th, 1918.

Full information can be obtained from the Registrar.

Notice to Associates.—Associates elected prior to August, 1915, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, can obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in securing appointments for qualified chemists.

The Library.—The Library is open for the use of Fellows, Associates and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. to 2 P.M.), except when examinations are being held.

History of the Institute, 1877-1914.—A number of copies of the Special Edition of the History of the Institute,

printed on hand-made paper and bound in cloth, are obtainable at 15s, each net.

Lighting, Heating and Power Order, 1918.—A letter has been received from the Board of Trade on the subject of the restriction on the consumption of gas and electricity imposed by the Lighting, Heating and Power Order, 1918. The Board state that where consulting analytical research and technological chemists and teachers and professors of chemistry are able to show that by reason of their professional needs they have been unable to effect the economy prescribed by the Order the Board will accept this as a sufficient explanation under paragraph 14 of the Order.

"14. Proceedings for infringements of Part II. of this Order shall not be instituted except by or by the direction of the Board of Trade or the Attorney-General. Before instituting any proceedings the Board of Trade shall call up in the person affected to give an explanation of the apparent excessive consumption, and the Board shall consider any explanation offered. Provided that it shall be assumed in any prosecution unless the contrary is proved, that such explanation was called for and if offered considered before such prosecution was instituted."

Science in Education.—Attention is directed to the report recently published (Cd. 9011) of the Committee appointed by the Prime Minister "to enquire into the position occupied by natural science in the educational system of Great Britain, especially in secondary schools and universities, and to advise what measures are needed to promote its study, regard being had to the requirements of a liberal education, to the advancement of pure science, and to the interests of the trades, industries, and professions which particularly depend upon applied science."

The report includes recommendations the general aim of which is to secure for science a more prominent place in the curricula of elementary, secondary and technical schools, in the work of the universities and in the examinations in medicine, engineering, the army and the civil service. The

Committee also advocates an extension of scholarships and further provision for research.

A considerable portion of the report deals with the necessity for science in war, as also in industry and trade, and

its value as a part of general education.

The Committee reviews the existing provision for the teaching of science in schools and in the universities, and in courses for medicine, pharmacy, engineering, agriculture, the chemical industries, the army and navy, and the civil service. lack of science in the training of infantry officers in the Army is a subject of special comment. "Officers of all ranks should have a keen appreciation of the scientific problems involved in methods of modern warfare." At Woolwich, though science is a compulsory part of the course, cadets who possess high scientific abilities are not given sufficient opportunities for developing them and, when they leave, little encouragement is given them to improve their scientific qualifications for the benefit of the country. The Committee was informed by a witness that, "broadly speaking, the fact that a man had high scientific abilities gave him no advantage in his military career." Although the intellectual qualifications of the cadets at Woolwich are acknowledged to be higher than those of cadets who obtain admission to Sandhurst, it is from among the latter that the staff of the army is mainly recruited. Steps ought to be taken to encourage in every way possible those entering the army who have scientific ability. A special permanent organisation is necessary to deal with the scientific problems suggested by the needs of the services.

The provision of an increased supply of trained scientific workers of all grades in our industries is "a matter of the utmost gravity and urgency." The Committee recommends "That concerted efforts should be made by employers, teachers, local education authorities, and the State, to increase the flow of capable students to the universities and higher technical institutions with a view to securing the larger supply

of trained scientific workers required for industrial and other purposes."

The following abstracts are also of interest to chemists:—

It is absolutely necessary for the prosperity and safety of the country after the war that the development of the resources of the Empire and the production of our industries must be on a scale greatly in excess of anything we have hitherto achieved. Schemes of reconstruction and development are being prepared and discussed; each requires a supply of trained workers, and the proposals will be futile unless a large army of such workers is forthcoming. We shall not get them in anything like sufficient numbers unless we have great changes in our educational system, and, above all unless a much more eager desire for secondary education is created in the minds of a great mass of our citizens. We must multiply the number of students passing through our universities and technical schools, and secure a great increase in the numbers of boys and girls who complete courses of secondary education. It is of no less importance to diminish the leakage, amounting now to more than 60 per cent., which occurs in the secondary schools before the general course is completed.

We must, by means of scholarships and maintenance allowances, place a complete course of training within the reach of every boy or girl of sufficient ability to profit by it. But this is not sufficient. We must provide the opportunities, make our citizens eager to avail themselves of them, and strive to make parents anxious to secure secondary education for their children. This is regarded as the most vital and difficult part of the whole

question.

The deficiency of recruits for the scientific professions and industries is so great that there is no available source of supply which we can afford to leave untapped. The chief direct sources of supply at the present time are (1) the secondary schools, and (2) evening and other similar schools educating pupils below the university age. So far as the latter group of schools is concerned the number of students passing on to the universities and technical colleges could be largely increased. To make this possible, there must be a generous provision of scholarships, and the industries should be organised so as to give facilities for suitable men to pass from the works to the university with the prospect of securing better-paid posts on their return to employment.

If science is to come by its own the nation as a whole must be brought to recognise the fundamental importance of the facts and principles of science to the right ordering of national life. The more closely the work of legislators touches the life of the people, the more intimately it is concerned with questions of food supply, housing, transport, the utilisation of natural resources, and the conditions which make for bodily health,—the more dependent it becomes on the skilled advice and assistance of those who can bring their knowledge of science to bear on social and economic problems.

Committee on Modern Languages.—The Report of the Committee appointed by the Prime Minister to inquire into the position of modern languages in the Educational System of Great Britain (Cd. 9036) was published in April.

The main recommendations are:—

1. That modern studies be energetically fostered by all public and local authorities concerned with education and with public and private business.

2. That means be taken to bring the business world into closer touch

with education.

3. That an Advisory Committee be set up for modern studies at the universities and for scholarships.

With regard to German, the report contains the following views:—

"If Germany after the war is still enterprising, industrious, highly organised, formidable no less in trade than in arms, we cannot afford to neglect her or ignore her for a moment; we cannot leave any of her activities unstudied. The knowledge of Germany by specialists will not suffice; it must be widespread throughout the people. It will in any case be impossible to oust the use of German in commerce, even for our own purposes at home, apart from any question of competition in neutral countries. If we are not ourselves able to supply men who have sufficient knowledge of German to conduct the necessary correspondence, strong incentive will be offered to revert to the old practice of employing qualified German clerks for the purpose. This is only one of many considerations which lead us to the conclusion that it is of essential importance to the nation that the study of the German language should be not only maintained but extended."

Committee on Commercial and Industrial Policy.— The final report of this Committee was published on April 26th, and contains proposals with regard to "dumping," the maintenance of "key" industries (covering synthetic dyes, spelter, tungsten, magnetos, optical and chemical glass, hosiery needles, thorium nitrate, limit and screw gauges, and certain drugs); protective customs duties or other Government assistance to carefully selected branches of industry essential to the country; preferential treatment for the Dominions; utilisation, if possible, of Customs duties in promoting trade with allies and neutrals; and the establishment of a strong independent Board to deal with all applications from industries for State assistance whether by protective duties or otherwise.

The Committee state that:—

[&]quot;War requirements have enormously increased our productive capacity

in certain great branches of industry, notably the steel and chemical trades, and in numerous directions British manufacturers have shown much adaptability and resourcefulness. The Committee believe that the knowledge and experience gained during the war will be a most valuable asset, and they urge the vital importance of every effort on the part of both employers and employed to attain the largest possible volume of production in order to secure the speedy recovery of our industrial and financial position."

The Committee re-affirm the main recommendations of their interim report.

The Committee recognise that it will be necessary to continue for a period after the war some control of home and foreign trade, in order to secure adequate supplies of foodstuffs and raw materials for industry. They recommend, however, that such measures should be kept within the narrowest possible limits, and that, wherever practicable, the trades concerned should be entrusted with the working of the control under Government authority.

With regard to "key" industries, which should be maintained in this country at all hazards and at any expense, the Committee recommend that a permanent Special Industries Board should be established, charged with the duty of watching the course of industrial development and of framing from time to time, when necessary, either on its own initiative or on the application of interested departments or persons, detailed schemes for the promotion and assistance of industries concerned with the production of commodities of the special character indicated.

As regards industries generally the Committee agree that the individual manufacturer and merchant will find it increasingly difficult to keep abreast of technical progress and to meet effectively the competition of powerful foreign consolidations and combinations operating under a single guidance and with great financial resources. It is in their view necessary that in some important directions the individualistic methods hitherto adopted should be supplemented or entirely replaced by co-operation and co-ordination of effort in respect of: (I) The securing of

supplies of materials; (2) Production, in which is included standardisation and scientific and industrial research; and (3) Marketing.

The Report also deals with "Organisation and Finance,"

a Fiscal Policy, and other matters.

La Société de Chimie Industrielle.—The inaugural meeting of "La Société de Chimie Industrielle" was held at Paris on March 16th, M. Clementel, Minister of Commerce, in the Chair.

A report of the meeting and of the subsequent proceedings appears in the *Journal of the Society of Chemical Industry* (April 15th, 1918).

Meldola Memorial Library.—The Committee of the Meldola Memorial Library Fund have reported that over £200 has been raised and the Library is about to be formed.

Chemical Bibliography.—At a joint meeting of various chemical societies held in April, an Executive Committee was appointed to draw up a scheme for the production of an English work of reference covering scientific and industrial chemistry on lines similar to those of Beilstein's Organische Chemie, and to report thereon to a General Committee of Chemical and Allied Societies.

British Science Exhibition.—The British Science Guild is organising an exhibition—to be held at King's College, London, in August—of products and appliances of scientific and industrial interest which, prior to the war, were obtained chiefly from enemy countries but are now produced in the United Kingdom. The President has been appointed to represent the Institute on the Sectional Committee. Particulars can be obtained from the Secretary (Mr. F. S. Spiers), 82, Victoria Street, London, S.W. I.

INSTITUTE OF CHEMISTRY.

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PROCEEDINGS.

1918.

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PROCEEDINGS OF THE COUNCIL (JUNE-NOVEMBER, 1918). SUGGESTED GOVERNMENT CHEMICAL SERVICE. DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH. OBITUARY.

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NOTICES: LOCAL SECTIONS; EXAMINATIONS; NOTICE TO ASSOCIATES; APPOINTMENTS REGISTER; LIBRARY.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary,

30, Russell Square, London, W.C. 1, November, 1918.

Proceedings Committee, 1918-19.

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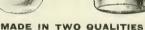
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PROCEEDINGS.

JUNE-NOVEMBER, 1918.

Local Sections.—The Council have had much pleasure in confirming the formation of local sections of the Institute at Birmingham, Edinburgh, Glasgow, Gretna, Liverpool, Manchester and Swansea. Steps are also being taken, in accordance with the resolutions passed at the Extraordinary General Meeting held on April 27th last, towards the formation of sections in other centres, and the Council hope that all Fellows and Associates will co-operate in the movement.

The names and addresses of the local secretaries are given

on pp. 63-65.

At the inaugural meetings the members present have discussed the draft rules for local sections and a suggested new scheme for the election of the Council of the Institute. The views on these matters thus obtained will be considered in due course by the General Purposes Committee.

Hitherto the initiation of Local Sections has been left to the Members themselves, but as no steps had been taken with regard to London the Committee recommended and the Council resolved that the matter should be taken in hand as soon as possible.

Federal Council of Chemical Society.—The Council have discussed the position of the Institute in connection with the proposed Federation of Chemical Societies. In this connection a letter was received from Prof. H. E. Armstrong, stating the objects of the Federal Council and intimating that it had been suggested that the Institute should not be a constituent body, but should be associated with the Federal

Council and represented on it while remaining free as the Professional Body to carry out its duties in accordance with its Charter. To this proposal the Council agreed.

Appointment of Honorary Treasurer.—The Council have pleasure in announcing that Mr. Edward William Voelcker, A.R.S.M., has accepted the appointment of Honorary Treasurer of the Institute, in place of the late Mr. Alfred Gordon Salamon, A.R.S.M. The thanks of the Council have been accorded to Mr. William Thomas Burgess, Vice-President, for his services as Acting Honorary Treasurer while the selection of Mr. Salamon's successor was under consideration.

Election of a Member of Council.—Prof. Frederick George Donnan, F.R.S., has been elected a Member of Council in place of Prof. Jocelyn Field Thorpe, C.B.E., F.R.S., who has retired owing to pressure of official work.

Finances.—Before the outbreak of war it was anticipated that the work of the Institute could be carried on without increasing the Annual Subscription of the Fellows and Associates, but in view of the prevailing economic conditions and in order to develop the activities of the Institute on the lines decided at the Extraordinary General Meeting held on April 27th last, the Council, acting on the recommendation of the Committee, have resolved to adopt the following alterations forthwith:—

- (1) That the Fellow's Annual Subscription be increased from $\xi 1$ is. to $\xi 2$ 2s.
- (2) That the Associate's Subscription be increased from firs. to firs. 6d.
- (3) That the Student's Annual Subscription be increased from 5s. to 1os.

With one exception the Meetings held to inaugurate Local Sections of the Institute have agreed to the principle involved. The Council hope, therefore, that they will have the support of the Institute generally in this decision.

The additional income to be derived from the increased subscription will be devoted to the promotion of the interests of the Members and Students in every way possible, and particularly in the following directions:—

The development of Local Sections.

The revision of the method of electing the Council, and provision for the payment of fares of country Members of Council to at least four Meetings annually.

The extension of the publications of the Institute; providing for a Register containing more information about the Fellows and Associates, more frequent *Proceedings*, Lectures, and special issues, such as "Official Chemical Appointments," as well as propaganda bringing before the public the importance of chemistry to the country, its industries and commerce.

The more complete organisation of the "Appointments Register" and, generally, of means for assisting Fellows and Associates to secure professional employment.

The improvement of the Library.

The increase of the official staff for the above purposes.

The Finance Committee have been instructed to revise the schedule of Life Compositions, and the General Purposes Committee to consider the desirability of revising the Bye-Laws dealing with Subscriptions and Entrance Fees.

The Council have also decided to make a further appeal to Fellows and Associates with a view to the completion of the Building Fund.

Industrial Appointments.—Although since the signing of the armistice conditions have been rapidly altering, the Council think it well to record that in June last they were in communication with the Ministry of Labour with reference to the provisions of Regulation 8B made under the Defence of the Realm Act, whereby candidates for certain appointments were required to "apply to the nearest Labour Exchange." The Ministry replied explaining that technically the restrictions imposed by the Regulation applied to advertisements

for any person required by firms carrying on the classes of business specified in the Regulation, viz., engineering, ship-building, or the production of arms, ammunition or explosives, or of substances required for the production thereof. The Minister, however, did not in practice raise objection to the publication in the usual manner of advertisements relating to higher staff appointments, and in accordance with this practice it was not necessary that advertisements for duly qualified professional chemists should comply with the condition that applicants should be referred to an Employment Exchange and not direct to the employer or a box number. The procedure, however, still applied to advertisements for subordinate, laboratory staff who did not require definite professional qualifications.

Officers' Resettlement Committee.—The Ministry of Labour having requested the Council to appoint a representative of the Institute to serve as a Member of the Officers' Resettlement Committee, the Registrar has been nominated for that purpose. The functions of the Committee are to afford guidance to the officials of the Appointments Department of the Ministry and when necessary to interview Candidates, to advise them and give them assistance in the choice of a career.

The Registrar has attended meetings in connection with the work of the Committee and has promised that the Institute will do all it can to find appointments for chemists and chemical students who have been serving with the forces.

Appointments Register.—In view of the prospect of the demobilisation of a considerable number of chemists who had been serving with the Forces, and of others who had been engaged in industries connected with the War, the Council have decided to give further publicity to the Appointments Register of the Institute. Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to direct attention to suitable vacancies for qualified chemists.

Industrial Councils.—The General Purposes Committee have had under consideration the position of the Institute in relation to the proposed appointment of National Industrial Councils under the Whitley Report. A letter has been addressed to the Minister of Labour, pointing out that, although modern productive industry depends so much on the work of chemists, engineers and the like, such technical experts do not appear to have any place in the constitution of the Industrial Councils, and asking, in view of the fact that it is proposed that the Industrial Councils shall deal with such subjects as technical education and training, industrial research, utilisation of inventions and improvements, and industrial experiments—(a) whether it is intended that qualified professional technical experts shall be represented on the Industrial Councils; and (b) whether it is desired that the professional bodies representing such men should be brought into consultation in any way in connection with the technical matters mentioned in the Report.

Mr. Roberts, the Minister of Labour, has promised to give the matter his careful consideration.

Professional Interests.—The Public Appointments Committee have reported on the representations made to the Corporation of Birmingham with reference to the action of the Municipal Research Laboratory in sending out pamphlets and letters soliciting practice in competition with private chemical practitioners. The Council hope that the differences which have arisen between the Municipal Research Laboratory and professional chemists in Birmingham may be satisfactorily and amicably adjusted, and have suggested that there should be no serious obstacle to such settlement, since, on the one hand, it is admitted that there is room for a Municipal Laboratory, and, on the other, assurance has been given by the City authorities that they have no desire to prejudice the interests of professional chemists.

The Public Appointments Committee, in conjunction with representatives of the Society of Public Analysts, are also

watching the interests of professional chemists in connection with the proposed Bill for the establishment of a Ministry of Health. Having in view the greatly increased working costs of public analysts, they have expressed the opinion that such officers are fully justified in asking for a readjustment of their remuneration.

On the recommendation of the Committee, the Council have approved a statement on the necessity for a definitely organised Government Chemical Service, which has been brought to the notice of all Government Departments concerned. A copy of the statement appears on p. 14.

The attention of the Council has been directed to representations made to the Ministry of Munitions by chemists engaged in H.M. Factories. The Council have addressed a letter to the Minister of Munitions, approving and supporting in general principle the claim for the more adequate recognition of the services of munition chemists.

The Regulations.—The Council have revised the Regulations for the admission of Students, Associates and Fellows on the lines agreed upon at the Extraordinary General Meeting held in April. Copies will be forwarded to members and prospective Candidates free of charge on application to the Registrar.

Institutions.—The following institutions have been added to the list of those formally recognised by the Council for the training of Candidates for the Examinations of the Institute:—Blackburn: Municipal Technical School; Bradford: City Technical College; London: Battersea Polytechnic, Birkbeck College, South-Western Polytechnic; Reading: University College; Salford: Royal Technical Institute; Perth (W. Australia): The University of Western Australia.

Examinations.—At the examinations for the Associateship held in July only four Candidates presented themselves. The following were successful:—In Organic Chemistry: William Henry Craven, B.Sc. (Lond.); In the Chemistry of Food and Drugs, etc.: Miss Ella Caird. The examination papers are given on pp. 21-23.

Two Candidates, Edwin Burnhope Hughes and Samuel Davenport Fairfax Harwood, have also been examined in Mauritius and both passed in the Chemistry of Food and Drugs, etc.

Chemical Society Library.—The Council of the Institute have subscribed the sum of £25 towards the scheme for enlarging the scope of the Library of the Chemical Society and extending its use to the members of other scientific bodies.

Patents and Designs Bill.—Following on the Technical Institutions' Conference on Patent Law Amendment, referred to in Proceedings, Part III., a Committee was appointed on which the Institute was represented by Mr. Horatio Ballantyne, Vice-President, to consider the provisions of the Patents and Designs Bill, 1917, and Patent Law Amendment generally.

Arrangements were made with the President of the Board of Trade to meet a deputation regarding the Bill at Whitehall Gardens, on Thursday, October 10th. Sir Albert Stanley was unable to be present, but Mr. Wardle, M.P., Parliamentary Secretary of the Board, with Sir H. Llewellyn Smith and Mr. Temple Franks, Controller of Patents, received the deputation, representing many engineering and technical societies and professional institutions.

Mr. Michael Longridge, President of the Institution of Mechanical Engineers, spoke on the subject generally and introduced the other speakers. Dr. Ferranti spoke on a moratorium for patents.

Mr. Ballantyne referred to the importance of protecting inventions relating to food, medicinal or surgical products, and the importance of "product" claims, the abolition of which appeared to be sought in Clause 11 of the proposed Bill of 1917. He showed that this would be a special hardship in the case of chemical inventions and would act as a deterrent to the development of chemical industries. In the present advanced state of chemical science, when a new compound was discovered, alternative processes for its manufacture were, as a rule, soon invented. These later processes were sometimes as good as, or even preferable to, the original method, and in the absence of a product claim the real pioneer and founder of the new manufacture would be liable to lose the reward of his invention. Even if the patentee himself were fortunate enough to discover or acquire such alternative processes, he naturally would use in practice only that method which he preferred, a very small commercial advantage being

sufficient to determine his choice. He would then run the further risk (under the provisions of the 1917 Bill) of being penalised, for the non-working of such alternative processes, either by way of revocation or otherwise.

Without a product claim, it would be practically impossible to prove infringement in cases where the manufacture occurred abroad, since a chemical compound rarely afforded any reliable indication of the process by which it had been made. This consideration applied with special force to Germany, from which country the substance could, with impunity, be imported either directly or by a roundabout route, and the patentee would have no remedy. A product claim, however, would enable the infringement to be stopped. No tariff or other protective measure would be so effective a bar to unfair competition of this kind.

The inventive ability called for in the discovery of synthetic chemical compounds was of a very high order and should be encouraged in every way. The real invention in such cases was the new substance itself and not merely the method by which it had been made. If the reward for such inventions was likely to be small, or if the patent was liable to the risk of evasion by the use of alternative processes, neither capital nor individual effort would be attracted to the development of such manufactures. It was precisely in manufactures of this kind that German chemical industry had attained such a commanding position. Nothing should be done to discourage British chemists and manufacturers from pursuing research upon this high plane of intellectual activity.

The existence of a product claim was no bar to the invention of alternative methods; these processes could be patented. If the exploitation of such processes were prevented by the refusal of the first patentee to grant a licence on reasonable terms, compulsory licences would be the proper remedy.

Mr. W. M. Mordey (Institution of Electrical Engineers) spoke on the extension of the term of patents, the period of provisional protection, the period for acceptance of the complete specification and the reduction of patent fees; Sir George ('roydon Marks on the protection of patentees in relation to utilisation of their inventions by the State; Mr. M. Atkinson Adam (Institution of Automobile Engineers) on the limitation of provisions for revocation of patents and safeguarding patents of addition; and Sir Robert Hadfield, F.R.S. (Sheffield Society of Engineers and Metallurgists) on suggestions for a special tribunal to deal with patent cases.

Mr. C. H. Wordingham thanked the representatives of the Board of Trade for receiving the deputation.

Mr. Wardle said that the views of the deputation would be very carefully considered in drafting the new Bill.

It is understood that the views expressed by the deputation are under consideration by the Board, and that the presenta-

tion of the Bill in Parliament has, therefore, been temporarily delayed.

Chemists and Military Service. — The final list of certified occupations, R. 136 (Revised), which came into force on September 26th, 1918, included the following:—

Occupation.	If born in or before the year stated.	
Under Part I.—General Reservations.		
. Chaer I and I.—General Reservations.	Grade I.	Grade II.
DIRECTING HEAD OF A BUSINESS (Managing Proprietor, Managing Partner, or Managing Director). MANAGER, DEPARTMENTAL MANAGER WORKS CHEMIST.	1875 1875 1889	1875 1875 1889
Under Part II.—Reservations in Particular Trades.		
Industry and Occupation.		
CHEMIST, ANALYTICAL, CONSULTING, OR RESEARCH, to be treated as in a certified occupation if re-		
commended by the Royal Society	1894	1894
(a) Chemist	1894	1894
Dyewares, Manufacture of: Synthetic Dyes: (a) Chemist Vegetable Dyes, including Wood Extracts for	1894	1894
tanning and other purposes :— (e) Chemist	1894	1894
Public Authorities and Public Utility Services.		
LOCAL GOVERNMENT AUTHORITIES:— Officials on the Administrative or Technical Staffs of (excepting those in trading undertakings carried on by Local Authorities, or in other		
classes mentioned elsewhere in this List) .	1883	1885
Assay Offices:— (a) Assayer; Chemist	1888	1890

Special Brigade, R.E.—Field-Marshal Sir Douglas Haig, referring to the work of the Royal Engineers, in his despatch on the March retreat, published on October 22nd, 1918, said:—

"On different occasions, and particularly on the Third Army front at the commencement of the German offensive, personnel of the Special Brigade (Gas Services) became involved in the infantry battle, and behaved with a like gallantry to that which they have always displayed in the performance of their special duties."

Death of Lieut.-Colonel Edward Frank Harrison, C.M.G.—The Council record with deep regret the death of Lieut.-Colonel E. F. Harrison, whose name will long be remembered for his valuable services in connection with the protection of the British and Allied Forces against gas attacks.

Personal.—Sir Herbert Jackson, K.B.E., F.R.S., has been appointed Director of Research to the British Scientific Instruments Research Association.

Lieut.-Colonel A. W. Crossley, C.M.G., F.R.S., has been appointed Daniell Professor of Chemistry in the University of London, King's College.

Mr. Charles R. Darling has been appointed Chairman of the Admiralty Committee on Electric Welding Research.

Sir Boverton Redwood, Bart., has been appointed Chairman of a Committee appointed by Mr. Walter Long to investigate the available sources of supply of alcohol, with particular reference to its manufacture from materials other than those which can be used for food purposes, the method and cost of such manufacture, and the manner in which alcohol should be used for power purposes.

Professional Institutes.— Attention is directed to a case decided by Mr. Justice Eve on July 17th last (Institute of Chartered Accountants v. Hardwick), in which the Institute of Chartered Accountants sought to restrain the defendant, who had formerly been, but no longer was, a member of the Institute, from using on his letter-paper, etc., in connection with his business of accountant and auditor, the words "Honours Final, Institute of Chartered Accountants." The Institute held that, although the defendant had passed the final examination of the Institute with honours, the words used were calculated to convey the false impression that he was still a member of the Institute. Evidence was called to show that independent members of the public had in fact been misled by the words complained of into believing the defendant to be a member of the Institute, and an injunction

was therefore granted. The decision is obviously of importance to any public body constituted for the purpose of elevating the status of a profession, and maintaining it, in the public interest, at a high level of efficiency and integrity. Such a body is properly jealous of its rights and bound to protect them in case of infringement. From a legal point of view the position is that, whilst any person has the right to state facts, he has no right to state them in such a manner as to mislead; and where there is any doubt as to whether or not an ordinary reasonable person will be misled, the question resolves itself into one of evidence.—Abstracted from *The Secretary*.

Suggested Government Chemical Service.

The Council of the Institute of Chemistry desire to direct the attention of His Majesty's Government to the increasing and vital importance of chemical science in affairs of the State.

The Institute, which has now been in existence for over forty years, is entrusted by Royal Charter with the duty of maintaining the status of the profession of chemistry, by prescribing courses of training for students of chemistry, by conducting examinations, and by the registration of persons found competent to practise.

During the War, moreover, the Institute of Chemistry has been one of the chief agents for mobilising the chemists of the country both for technical service with the Forces and in the

production of war material of every description.

The Council submit the opinion that the time is opportune for taking steps to secure for the profession of chemistry a position corresponding to that occupied by other learned professions, and they feel that much would be accomplished towards the attainment of that aim, if, in the first place, adequate and uniform conditions of appointment were accorded to chemists directly engaged in the service of the State.

The necessity for a definitely organised Chemical Service (both in peace and war) for all purposes of the State on which the science of chemistry has a bearing has long been recognised in the chemical profession, and representations have been made from time to time to ministers of State, Government Commissions and other public authorities. As an example, it

may be mentioned that, as the result of representations made by the Institute, the qualifications for appointment of public analysts under the Sale of Food and Drugs Acts have been determined by Regulations framed by the Local Government Boards for England and Wales, Scotland, and Ireland, under which the country has undoubtedly secured the services of a body of chemists highly qualified in that branch of work.

It may be pointed out also that the Department of the Government Chemist has been organised under a separate Treasury vote. Other departmental chemical establishments, however, have not been brought into line, and it does not appear that the position of chemists in the Government service generally is sufficiently understood and appreciated to obtain for them that measure of recognition which should be accorded to professional men of this type in the interests of the safety and well-being of the State.

The Council of the Institute regard it as a first principle that the Government should take steps to remove the confusion (existing in this but in no other country) which arises from the use of the title "chemist" by those who practise pharmacy.

The Government have already, in effect, recognised the true meaning of the designation "chemist" by applying this title to the "Government Chemist," the "War Department Hhemist," and the "Admiralty Chemist," who are not pharmacists. The Council feel that in the Government service the title "chemist" should be included in the designation applied to all properly qualified chemists,* and that it should not be used in the case of any other appointments.

^{*} The expression "properly qualified" in this connection should be taken to mean chemists who have attained a standard of competency at least equivalent to that required for the Associateship of the Institute under the Regulations adopted in accordance with the Charter. Briefly the standard adopted for the Associateship of the Institute is that of a university degree with first or second class honours in chemistry, including systematic training in physics and allied sciences. This involves a technical training extending over at least four years, and one comparable, therefore, with the training required for other professions.

The Civil Service includes chemists engaged in research, in analysis, and in technological work, as well as those employed in educational work. This memorandum relates chiefly to the first three branches.

Only persons possessing recognised qualifications should be eligible for appointment as chemists in the Government Chemical Service. Such appointments should be rendered attractive to those who have reached the required standard of efficiency. There should be no confusion between these chemists and their unqualified assistants.

The Council suggest-

(I) That, as candidates should be required to produce evidence of qualification, the appointment of chemists should be based on a system of selection by properly constituted authority, and not by examination or nomination.

(2) That the names of approved candidates should be placed on a short list from which the heads of the respective Government chemical establishments would themselves make

the final selection.

(3) That persons appointed as chemists should be graded as civil servants in the Higher Division, preferably as members of a professional division, if such be at any time constituted, with status, emoluments and pension comparable with those of the members of other technical and learned professions employed by the Government.

(It is further suggested for consideration that pensions should follow the lines of the insurance scheme of the federated universities, which has been adopted by the National Physical

Laboratory.)

(4) That, dependent on satisfactory service, the system should provide for certainty of promotion (with corresponding advance in emoluments) up to a definite rank, independent of the occurrence of vacancies.

(Note.—This is a necessary condition if men of the best type are to be obtained. A chemist should be constantly increasing in efficiency, and this should be recognised by providing for certainty of promotion as suggested, not necessarily to the highest rank, but to one securing an adequate salary to a married man, say, to that of Principal Assistant Chemist in the scale outlined in (5) below.)

(5) That suitable titles should be allotted to the different ranks of the Government Chemical Service, in order of seniority as under, the rank held by the head chemist in any establishment being determined by the size of the establishment and by the nature of the work carried out:—

Chief Chemist, with, in certain cases, a special departmental title.

Deputy Chief Chemist.

Superintending Chemist.

Principal Assistant Chemist.

Senior Assistant Chemist.

Junior Assistant Chemist.

- (6) That definite salaries and increments should be prescribed for all ranks of the Government Chemical Service.
- (7) That the secondary staff, to whom the title chemist would not be applicable, should be classified as under:—
 - (a) Chemical Assistants (Senior and Junior), who should be men of good education, but without full professional qualification. (On obtaining the latter they would become eligible for appointment as chemists and would acquire the status necessary for presenting themselves to the board of selection referred to above.)
 - (b) Laboratory Assistants (Chief, Senior and Junior), who should be capable of performing simple chemical operations, assisting the chemists in the routine or mechanical parts of their work, fitting up apparatus, etc.
 - (c) Laboratory Attendants (Senior and Junior), who would do the ordinary work of caretaking, cleaning of the laboratory and apparatus, etc., with prospects of promotion to Laboratory Assistant.

The Council believe that, apart from the direct advantage

to the State which would accrue from such an organisation, the recognition thus given to chemists by His Majesty's Government would raise the status of the profession of chemistry and incidentally contribute to the advancement of chemical science.

Copies of the above memorandum have been sent to all Government Departments to which chemists are attached.

Scientific and Industrial Research.

The Third Report of the Committee of the Privy Council for Scientific and Industrial Research for the year 1917—18 (Cd. 9144), published at the end of August, deals with the extension of the work of the Department.

The Committee have approved of the scheme of research submitted by the Fuel Research Board, under the Directorship of Sir George Beilby, which involves the erection and equipment of a Fuel Research Station at an estimated cost of £120,000. The Committee have assumed responsibility for the maintenance and development of the National Physical Laboratory, and have approved extensions of the Laboratory for the testing of the higher grades of chemical glass and of clinical thermometers. It is noted that all such thermometers must now comply with the specifications drafted by the Ministry of Munitions in consultation with the Local Government Board and the Research Department.

A Food Investigation Board has been established, and a series of investigations has been initiated under its direction. A Research Board has been established to direct investigations into the production of tin and tungsten in Cornwall. The Committee have also sanctioned a series of tests on home-grown timber, having in view the reafforestation of the country after the war.

Progress has been made in establishing industrial research associations, in connection with which Parliament was asked to vote a sum of one million sterling as a fund to be expended in grants to such associations over a period of five or six years. The Department have guaranteed to the British Scientific Instrument Research Association a sum of £36,000 for approved research during the next five years, and have

agreed to pay £1,500 a year during the same period to the British Photographic Research Association. The Committee have also promised a yearly contribution of £ for £ to the British Cotton Industry Research Association and to the British Research Association for the woollen and worsted industry on the condition that the co-operating firms subscribe in each case an annual sum of at least £5,000. In connection with the administration of the National Physical Laboratory, the Department propose to adopt the Federated Universities' Insurance Scheme, established by the Board of Education for providing for the superannuation of the staff.

Examination for the Associateship.

Branch (d). -Organic Chemistry. July 8th to 12th, 1918.

MONDAY, JULY 8th: 10 a.m. to 1 p.m.

- 1. What views are taken of the constitution of diazo-compounds? State briefly the experimental data upon which those views are based.
- 2. Give an account of the more important types of catalytic reactions used in organic chemistry and quote examples of each.
- 3. Describe the synthesis of one of either of the following compounds:—
 (a) a hexose, (b) an alkaloid, (c) a terpene.
- 4. What methods would you apply in order to determine the molecular constitution of a hydrocarbon possessing the molecular formula, C_7H_8 ?
- 5. Indicate the manner in which the technically important derivatives of anthracene are prepared from the latter hydrocarbon.

TUESDAY, July 9th: 10 a.m. to 4.30 p.m.

You are provided with 100 grams of technical formic acid. Prepare and hand in 25 grams of pure formic acid.

WEDNESDAY, JULY 10th: 10 a.m. to 4.30 p.m.

Determine the percentage of glycerol contained in the crude material provided. (Crude glycerol.)

THURSDAY, JULY 11th: 10 a.m. to 4.30 p.m.

Separate and identify the aromatic amino-compounds present in the mixture A and hand in pure derivatives of each. (A mixture of aniline and β -naphthylamine)

FRIDAY, JULY 12th: 10 a.m. to 4.30 p.m.

Convert the given base B into its methiodide. Purify the latter and identify the base by making an iodine determination. (Pyridine.)

Branch (e).—Chemistry of Food and Drugs, etc. July 8th to 12th 1918.

MONDAY, JULY 8th: 10 a.m. to 1 p.m.

- 1. Write a short account of the knowledge acquired in recent years of the existence of what are called "vitamines" or "accessory" constituents of foodstuffs.
- 2. State what you know of the composition of butter fat, and describe exactly how you would proceed in order to detect adulteration with (a) beef fat; (b) coconut oil.

3. Describe processes for the detection and determination of the following preservatives in milk:—(a) formaldehyde; (b) benzoic acid; (c) boric acid,

(Answer in a separate book.)

- 4. State the various circumstances in which cases of poisoning by carbon monoxide occur. Give an account of the effects of this gas upon the body, and of the signs and tests which would prove it to have been the cause of death.
- 5. Give a full account of a general method which when applied to the extraction of alkaloids from viscera will yield products of sufficient purity for the application of specific tests. Discuss any difficulties that 'may arise if the materials have undergone putrefaction before analysis.
- 6. Give the composition and medicinal doses of the following:—Pilula Hydrargyri, Liquor Hydrargyri Perchlorid., Liquor Arsenicalis, Tinctura Xucis Vomicæ, Vinum Colchici and Tinctura Camphoræ Composita.

Enumerate the official preparations of Ipecacuanha and Belladonna.

2 p.m. to 5 p.m.

- 1. Identify a non-alkaloidal poison which has been added to the sample of Milk, A.
- 2. Prepare slides for the microscope to show as clearly as possible the following:—(1) Human blood corpuseles, (2) Characteristic structure in the stem of the plant provided, (3) the starch granules of the bean provided. Leave the slides upon your bench.
 - 3. Identify the structures on the prepared slides numbered 1 to 6.

TUESDAY, JULY 9th: 10 a.m. to 4.30 p.m.

- 1. Ascertain the saponification value, refractive index, and iodine absorption figure (Wijs) in the sample of Oil.
 - 2. Determine the sugar in the Cocoa Mixture.

WEDNESDAY, JULY 10th: 10 a.m. to 4.30 p.m.

- 1. The consumption of the rape cake of which a ground sample is supplied to you resulted in the death of a cow. Examine the sample and, if possible, indicate the cause of the mischief.
- 2. Identify the two white powders (n) and (h), making full notes of all your experiments and tests.

THURSDAY, JULY 11th: 10 a.m. to 4.30 p.m.

- 1. Determine the nitrogen and phosphoric acid in the sample of Fertiliser.
- 2. Determine the total lime soluble in hydrochloric acid in the sample of Soil.
- 3. Identify by inspection the samples of Fertilisers and Feeding Stuffs shown to you.

FRIDAY, JULY 12th: 10 a.m. to 4.30 p.m.

- 1. Report on the samples of Tea and Coffee.
- 2. Examine the Water supplied to you for metallic contamination.
- 3. Write reports based on the chemical and bacteriological data supplied to you relating to two samples of Drinking Water.

The Candidates were required to translate passages from French and German technical literature.

TRANSLATION.

Time allowed: 2 hours.

Je mehr freie Phosphorsäure vorhanden ist, desto mehr Eisen bleibt in Lösung. Wird die eisenhaltige Superphosphatlösung auf dem Wasserbade zur Trockne eingedampft, der Rückstand darauf mit Wasser aufgenommen, so löst sich derselbe nicht klar auf, es bleibt vielmehr ein starker Niederschlag in der Flüssigkeit bestehen. Dieses hydratische phosphorsäure Eisenoxyd kann im Superphosphat in einen vollständig unlöslichen Zustand übergehen, wenn ihm infolge der Auskristallisation des amorphen schwefelsauren Kalkes das Konstitutionswasser entzogen wird:

 $FePO_4$, $2H_2O + CaSO_4 = CaSO_4$, $2H_2O + FePO_4$.

Hiernach ist es auch erklärlich, dass man schlecht aufgeschlossenes Superphosphat nach einigen Wochen bzw. zurückgegangenes Superphosphat nicht mehr durch weiteren Säurezusatz verbessern kann; man erhält hierdurch nur eine nasse, schmierige Ware, da diese Säure sich dem Gips zugesellt, wodurch ${\rm CaH_2(SO_4)_2}$ entsteht. Erst lange Zeit nach erfolgtem Umarbeiten, Trocknen, wie auch unter Druck wirkt diese freie Säure auf unzersetztes Phosphat wohl ein, auf FePO₄ jedoch nicht.

Schucht.

L'appareil se compose d'un flaçon de faible capacité dont l'ouverture est tournée par le bas et dans lequel s'introduit, en le fermant hermétiquement, un tube à deux branches; le tout est placé au-dessus d'une petite chaudiere à eau formant bain-marie, et le flacon retourné se trouve recouvert par un double cylindre à travers lequel la vapeur d'eau produite s'élève. La longue tige du tube à deux branches est fixée sur une lame métallique portant une échelle divisée.

Pour se servir de l'instrument, on en démonte les differéntes parties, on remplit le flaçon intérieur du liquide alcoolique à essayer, on y ajoute du mercure, on ferme à l'aide du tube recourbé, et le mercure descend dès que l'appareil est replacé dans sa position normale. On chauffe alors l'eau du bain-marie à l'ébullition, tout en observant le thermomètre placé au-dessus du flaçon à l'interieur du cylindre; on constate que le mercure s'élève dans la grande branche du tube recourbé correspondant à l'échelle divisée en centièmes et dont chaque division représente un degré alcoolique. Cet appareil est sujet à de nombreuses causes d'erreur provenant des produits volatils qui accompagnent l'alcool dans les vins ou les spiritueux.

Ch. Girard and L. Cuniasse.

Obituary.

CAPTAIN JAMES SCOTT BAINBRIDGE was killed in action in France on March 22, 1918, in his thirty-first year. Educated at the North Eastern County School, Barnard Castle, he joined the staff of the chemical laboratory of Messrs. Rowntree & Co., York, in 1905, and two years later entered Leeds University, where he graduated as B.Sc. with First Class Honours in Chemistry, subsequently passing the Final Examination for the Associateship of the Institute. Having returned to Messrs. Rowntree in 1910, he engaged in research and contributed a paper on the aromatic principle of the cocoa bean. In the summer of 1914 he was appointed Research Chemist to the Doncaster Coalowners' Laboratory, but on the outbreak of war he enlisted in the Yorkshire Regiment, and went to France as a Company Sergeant-Major. He was mentioned in despatches and received a commission, was wounded and later returned to France as Adjutant. He was elected an Associate of the Institute in 1913 and a Fellow in 1916.

DAVID BENDIX was born in 1856 and educated at the Kaiserlich-Königliche Realschule, Berlin. In 1872 he entered Mr. Arthur Vacher's laboratory, in London, as a pupil-assistant; in 1874 he obtained an appointment with Messrs. Burt, Boulton & Haywood, and shortly after became managing chemist in their anthraquinone works at Victoria Docks; and finally he became Head Chemist and Works Manager to British Alizarine Co., which position he held for thirty-two years. He acted for many years as an abstractor for the Journal of the Society of Chemical Industry. He was elected a Fellow of the Institute in 1888.

ARTHUR CLEGG BOWDLER, an Original Fellow of the Institute, died at Blackburn on February 17th, 1918, in his seventy-sixth year. In his early days he was an assistant to Sir Edward Frankland and subsequently entered the firm of Messrs. F. C. Calvert & Co., of Manchester, for whom he managed the tar distillation section of their works. After leaving this firm he founded, with Mr. W. E. Bickerdike, the firm of Bowdler & Bickerdike, carbolic acid manufacturers. He was an entomologist of some distinction and made a special study of coleoptera.

HARRY BROADBENT died at Leeds on July 25th in his fifty-third year. He was trained at Yorkshire College, now the University, Leeds, and in 1886 joined the firm of Goodall, Backhouse & Co., in the same city, of whose laboratory he had charge since 1889. He contributed a paper on "Cream of Tartar" to the British Pharmaceutical Conference in 1890. He passed the Examination for the Associateship of the Institute in 1890, and was elected a Fellow in 1892.

LIEUT. CLARENCE EDWARD BUTCHER, Royal Fusiliers, was reported wounded and missing on May 3rd, 1917, and the War Council have now assumed his death. He was educated at Christ's College, Finchley, and having matriculated at London University in 1913, became registered as a Student of the Institute, at Finsbury Technical College, in 1915.

CHARLES GERARD CRESSWELL died at Ashstead, Surrey, on March 22nd, in his sixty-fourth year. Born at Barnes, Surrey, in 1854, he was educated at Ewell, and studied chemistry at the Royal School of Mines. He was for some time assistant to Dr. Thudichum, and afterwards became chemist at the Weston Iron Works, Widnes, and with Messrs. Chance Brothers at Oldbury. In 1883, he was appointed Secretary of the Society of Chemical Industry, from which position he retired in 1916. He was elected a Fellow of the Institute of Chemistry in 1887.

WILLIAM ADAM DIXON, who died in Sydney, N.S.W., on November 6th, 1917, was educated at Queenwood College, and received his early scientific training under Dr. Anderson, at Glasgow. For two years he held an appointment as chemist at Bonnington Chemical Works, but returned to Dr. Anderson as one of his principal assistants for about four years, when he was entrusted with the management of the manure works of Messrs. Bright Bros. at Malden Island, in the Pacific. After a short period, however, he had to relinquish this position owing to ill-health, and proceeded to Maitland, N.S.W., where he was engaged in chemical industry. Later he was Professor of Chemistry to the Pharmaceutical Society of New South Wales, and eventually established himself in practice in Sydney, where he was joined later by his son, who is also a Fellow. He was elected a Fellow of the Institute in 1878.

2ND LIEUT. STUART WYCLIFFE GOODWIN, M.C., Border Regiment, was killed in France on March 31st, 1918, in his twentieth year. Educated at Wellesley House, Broadstairs, and Blundell's School, Tiverton, he matriculated at London University, and was registered as a student of the Institute at the Imperial College of Science and Technology, in 1915. He was transferred from the University of London O.T.C. to an Officer Cadet Battalion, from which he was commissioned in the Border Regiment. leaving for the Front in October, 1917. On his death, his commanding officer wrote to his parents:-" He was a keen officer, liked by his men and brother officers, full of dash and courage. I considered him one of the best, if not the best subaltern in the Battalion. For gallantry in a previous action, I recommended him for the Military Cross, and his name was published in Divisional Orders just after his death, as having been awarded this decoration. He showed a splendid example to his men at all times of danger and was a loss to the battalion. You may well be proud of your son.'

RICHARD JOHN HALL died at Wallasey on June 21st, 1917, in his fifty-third year. He was trained for five years at Owens College, Manchester, where he graduated as B.Sc., and subsequently as M.Sc. by research under Professor W. H. Perkin. He passed the Examination for the Associateship of the Institute in 1903, and was elected to the Fellowship in 1906. He was chemistry master at Warrington and Winsford Technical Schools, and subsequently at Wallasey Grammar School.

LIEUT.-COLONEL EDWARD FRANK HARRISON died in London on November 4th, 1918, in his fiftieth year. Educated at the United Westminster Schools, he gained the Bell Scholarship in 1890 and entered the School of the Pharmaceutical Society, where he subsequently occupied several positions on the teaching staff and carried out research on the alkaloids of aconite. At about this time he also assisted the Examiners of the Institute. He was next engaged for about five years with Messrs. Brady & Martin at Newcastle-on-Tyne, and then was appointed head of the analytical department of Messrs. Burroughs, Wellcome & Co., at Dartford. He

graduated as B.Sc. (Lond.) in 1895 and was elected a Fellow of the Institute in 1905, in which year he was associated with Mr. C. E. Sage in a school of pharmacy. In the following year he established a practice as a consulting chemist at 57, Chancery Lane, in which he was joined six years later by Mr. P. A. W. Self. As analyst to the British Medical Association he carried out the analysis of a large variety of proprietary articles, the results of which were published in "Secret Remedies" and "More Secret Remedies," and gave evidence before a Select Committee of the House of Commons on "Patent Medicines" as the chief witness for the Association. He was the author of many papers, and his name is associated with a process for estimating the diastatic strength of malts. He also served as a member of the Board of Examiners of the Pharmaceutical Society. the outbreak of war he endeavoured to enlist, but was repeatedly declined. He became a special constable and a volunteer in the Inns of Court Reserve Corps, until he succeeded in joining as a private the Sportsmen's Battalion of the Royal Fusiliers, from which he was transferred, when "men with training in chemistry" were in demand for service with the Royal Engineers. He was about to proceed to France, but his joining a draft was accidentally delayed, and Colonel Sir W. H. Horrocks, at that time head of the anti-gas service, then secured his assistance. He received a commission as Lieutenant on the general list and became engaged on anti-gas problems. He is said to have been responsible for the organisation for supplying the British and certain of the Allied Armies with nearly fifty million respirators to provide adequate protection against gas attacks. In this work he was assisted by many Fellows of the Institute. His services were recognised by his speedy promotion to the rank of Lieut-Colonel, by the bestowal of the order of the C.M.G. and his appointment as an officer of the Legion of Honour. At the time of his death he occupied the position of Controller of the Chemical Warfare Department, and had he lived for a few days longer he would have attained the rank of a Brigadier-General. The funeral of Colonel Harrison took place at Brompton Cemetery with full military honours, the first part of the service being conducted at the Memorial Chapel of the Queen Alexandra Military Hospital, Millbank. The Institute was represented at the service by Sir George Beilby, past President, and the Registrar.

DAVID SMITH JARDIN died in Dublin on May 14th, 1918. Educated at Sullivan's Schools and Belmont Academy, Co. Down, he proceeded to the Royal College of Science, Dublin, and took the Diploma of the College in the Faculty of Manufactures with first prize in 1900. He passed the Final Examination of the Institute in the following year, after which he commenced practice in Dublin, and received the appointment of Analyst to the Department of Agriculture and Technical Instruction for Ireland. He was elected a Fellow in 1904.

WILLIAM JOEL KEMP died on March 22nd, 1918, in his seventy-eighth year. During his early career he assisted in the evening classes at Finsbury Technical College, and lectured on Chemistry to pupil teachers of the London School Board. He was for many years, and up to the time of his death, Managing Director of the Gypsum Mines, Ltd., Robertsbridge, Sussex. He was elected an Associate of the Institute in 1882 and a Fellow in 1885.

EDMUND ALBERT LETTS died at Ventnor on February 19th, 1918, as the result of a cycling accident the day before, in his sixty-sixth year.

Born at Sydenham, Kent, he was educated at Bishop's Stortford School, and received his scientific training at King's College, London, afterwards proceeding to Vienna and Berlin. In 1872 he became Chief Chemical Assistant at the University of Edinburgh, and in 1876 first Professor of Chemistry at University College, Bristol. He published papers on the Pollution of Estuaries and Tidal Waters, and "Some Fundamental Problems in Chemistry."

THOMAS WATSON LOVIBOND died on May 9th, 1918, at the age of seventy. The son of the founder of Lovibond's Brewery at Greenwich and Salisbury, he was educated at Greenwich, and entered his father's business in which he became Head Brewer and partner. In 1881, however, he entered as a Student under Professor Graham, at University College. where he studied for three years, and then secured an appointment as Head Brewer at Richardson's Brewery, Newark-on-Trent. In 1887 he became Head Brewer and Manager to Messrs, John Barras & Co.'s Newcastle Brewery, and in 1894 Managing Director of Newcastle Breweries, Ltd., of which company he became chairman in 1913. His elder brother, Joseph William Lovibond, was the inventor of the Tintometer, with which their name is associated. He was author of a book entitled "Brewing from Raw Grain," and of a number of papers on the subject of brewing. He was a Past President of the Institute of Brewing (1916-17) and prominent in the affairs of the Brewing industry generally. He was elected a Fellow of the Institute in 1883.

ELIAS MENDOZA died at Farnborough, in his twenty-fifth year. Educated at the Central Foundation School, Cowper Street, he entered Finsbury Technical College in 1910, and passed the Intermediate Examination of the Institute in 1915. On the outbreak of war he was attached as a cyclist to the Essex Territorials, but was shortly after transferred to the Royal Aircraft Factory at Farnborough as an Assistant Chemist. He was elected an Associate of the Institute in 1917.

2ND LIEUT. GEORGE WILLIAM MOORE was born in 1891 and educated at Oundle and Aske's Hatcham Schools. He was trained for three years at Finsbury Technical ('ollege, and one year at the Imperial College, and passed the Intermediate Examination of the Institute in July, 1914. Having joined the Territorials prior to the war, he served first in the 16th London Regiment, and was on service in France in November, 1914; in the following year he was transferred to the Royal Engineers and served as a corporal until July, 1917, when he became a cadet to the R.G.A. He was killed in action on March 28th, 1918, in France. His commanding officer wrote on his death:—" During a most critical phase of the battle he fought the gun with great gallantry and inspired the men with his own high standard of courage." He was elected an Associate of the Institute in October, 1917.

SIR ALEXANDER PEDLER, an Original Fellow of the Institute, died in London on May 13th, 1918, in his sixty-ninth year. He was educated at the City of London School, and in 1866, at the age of seventeen years, won the Bell Scholarship at the Pharmaceutical Society. Later he studied at the Royal School of Mines at Jermyn Street, and then worked for a short period at the original aniline colour factory of Perkin & Sons at Greenford Green before resuming his training under Sir Edward Frankland, then at the Royal College of Chemistry in Oxford Street. He carried out some research, which was subsequently published in the Journal

of the Chemical Society in 1868, in which year he went with the Solar Eclipse Expedition. In 1871-72 he was lecture demonstrator to Frankland and assisted in research on gaseous spectra under his professor and Sir Norman Lockver. In 1873 he was appointed Professor of Chemistry in the Presidency College, Calcutta, and having devoted considerable attention to meteorological phenomena, was concerned in the Eclipse Expeditions of 1875 and 1893. He was Meteorological Reporter to the Government of Bengal for twenty-two years. In the course of time he became Principal of the Presidency College and Vice-Chancellor of Calcutta University, and in 1899 Minister of Public Instruction, Bengal, and additional Member of the Legislative Council. He was the author of a paper on the cobra poison, contributed to the Proceedings of the Royal Society, and of three papers on the influence of tropical sunlight on chemical change. He was elected a Fellow of the Royal Society in 1892, and received the order of C.I.E. in 1901. On his retirement, in 1906, he received the honour of knighthood, and soon after his return to England became Hon. Secretary of the British Science Guild. During the war he was actively engaged on research for the Ministry of Munitions, and died while attending a Meeting at the Ministry.

HERBERT WALLACE ROBERTS, M.B.E., was born in 1883 and educated at the Masonic School, Wood Green, matriculating at London University in 1900. He was trained at King's College, London, and at the Battersea Polytechnic, and obtained the degree of B.Sc. (Lond.). He was engaged at the Cape Explosives Works, under Mr. K. B. Quinan, C.H., from 1908 until 1915, when he was appointed Chief Chemist at H.M. Factory, Queen's Ferry. He was elected a Fellow in 1917.

ALFRED GORDON SALAMON died April 9th, 1918, in his sixtieth year. After some experience in the draughtsman office of Messrs, Yarrow at Poplar, he entered the Royal College of Science in 1878, and studied chemistry under Sir Edward Frankland, biology under Huxley, and geology under Judd, taking the diploma A.R.S.M. in 1882. Two years later he began practice in a laboratory at his father's house at Clapham Park, and in 1886 moved to Fenchurch Avenue, where he continued until his death. While yet a student he devised a method of clarifying brewer's waste beer, rendering it suitable for blending with other beer, and in the course of time he became consultant to many well-known brewing companies and firms. In 1888 he delivered a series of four ('antor lectures on "Yeast" before the Society of Arts, and in the following year a lecture on the same subject before the Royal Institution. In conjunction with W. E. B. de V. Mathew, he contributed in 1885 a paper on "The Influence of Phosphate on Fermenting Worts," and with E. N. Goldie, in 1900, a paper on "The Manufacture of Caramel." In collaboration with Dr. J. J. Hood, he patented a process for desulphuring coal gas by the use of Weldon mud and several processes in connection with the manufacture of cyanides. He devoted his attention also to the industrial uses of ozone and other technological matters. He was a Past President and Hon. Foreign Secretary of the Institute of Brewing, and served as a Vice-President and Member of Council of the Society of Chemical Industry, of which society he was also for two years Chairman of the London Section. For his services to chemical technology he was awarded the distinction of Chevalier of the Legion of Honour. He was elected a Fellow of the Institute in 1887, was a Member of Council for two periods, was a Vice-President from 1902-3, and Hon. Treasurer from 1903 until his death.

ALFRED SENIER died at Galway on June 29th, 1918, in his sixtysixth year. Born at Burnley, he received his scientific education at the Universities of Wisconsin, Michigan, where he graduated in medicine in 1873, and Berlin, where he obtained the degree of Ph.D., and was for some time research student with A. W. von Hofmann (1884-87). From 1874 to 1882, he was demonstrator and assistant in Chemistry under Attfield at the School of the Pharmaceutical Society, and from 1881 to 1884 chemical lecturer at St. John's College, Battersea. In 1890 he acted as locum tenens to Maxwell Simpson at Cork, and in 1891 was appointed to the chair of chemistry in Queen's College (now University College), Galway, which position, with that of Lecturer on Medical Jurisprudence and Hygiene, he held at the time of his death. He was a Member of the Senate of the National University of Ireland since 1908, and received the degree of D.Sc. (Honoris Causa) from the Royal University. In 1912 he was President of the Chemical Section of the British Association. His research work, mainly on organic chemistry, was usually contributed to the Transactions of the Chemical Society. He was also the author of essays on educational and other subjects. He was elected a Fellow of the Institute in 1878.

2ND LIEUT. JAMES SALSBURY SMITH was reported missing November 30th, 1917, and was buried by the enemy on December 17th. He was educated at Cavendish School, Matlock, and Pannal Ash College, Harrogate, and subsequently became registered as a student of the Institute under Mr. John White, of Derby. At the time of his death he held a commission in the Loyal North Lancashire Regiment, and was in his twentieth year.

FREDERICK WILLIAM STREATFEILD, who died in London on March 24th, 1918, in his sixtieth year, received his earliest training in science in private laboratories. Specialising in organic chemistry, he collaborated with Messrs, Nevile and Winther at Wellingore, Lincolnshire, in their researches on orientation in the benzene and naphthalene series. This work led to the preparation of a-naphthol-4-sulphonic acid (the so-called Nevile and Winther acid), since employed in the production of several important azo-dyes. Streatfeild subsequently gained a scholarship at the Royal College of Science, London, and in 1882 worked with Professor Japp on certain condensation products of ketones. In the following year he was appointed Junior Demonstrator in the Chemical Department of the City and Guilds Technical College, Finsbury, when he began his long career as a teacher of applied chemistry. He continued his work as original investigator first with Professor Armstrong and then with Professor Meldola, the results being published in fourteen memoirs to the Transactions of the Chemical Society and other scientific periodicals. In the course of time he received promotion and finally held the post of chief assistant in the Department of Applied Chemistry. He was the author of a short treatise on "Practical Work in Organic Chemistry." It is to be regretted, however, that much of his highly specialised knowledge of proximate organic analysis has passed away with him. The services which he rendered as a teacher of chemistry won him the esteem and affection of several generations of Finsbury students, who have already shown their appreciation of their former teacher's worth and work by contributing to a fund for the institution of a Streatfeild memorial lecture and prize for practical chemistry. This discourse will be delivered annually at the City and Guilds College by a past Finsbury chemical student. He was elected a Fellow of the Institute in 1890.

FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERVING OR WHO HAVE SERVED WITH H.M. FORCES.

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

FELLOWS.

Agnew, J. W., 2nd Lieut., Highland Light Infantry (killed in action).

Akers, N. C., Lieut., R.N.V.R.

Alton, W. L. St. J., Sergeant, Honourable Artillery Company.

Archbutt, S. L., Corporal, County of London Regiment (Artists Rifles).

Atkins, W. R. G., Major, R.A.F.

Auld, S. J. M., Lieut. Colonel, Deputy Assistant Director Gas Services (Military Cross).

Bacon, G. N., 2nd Lieut., Royal Garrison Artillery.

Bainbridge, J. S., Captain and Adjutant, 4th Yorkshire Regiment (killed in action).

Baker, M. S., 2nd Lieut., R.N.R. (killed in action).

Barke, H. F., Bombardier, Gloucester R.F.A.

Barrowcliff, M., Malay States Volunteer Rifles.

Bassett, F. L., Captain, Royal West Kent Regiment.

Bean, C. E., Major, R.A.M.C.

Birch, W. Colet, Sapper, Motor Cyclist Section, R.E., British East Africa.

Blair, R. W., Lieut., R.E.

Bridge, S. W., Captain, Chemical Adviser.

Brooke, J. R., Singapore Veterans' Corps.

Brown, B. M., Captain, A.O.D.

Brown, J. A., Birmingham Battalion (killed in action).

Browne, Frank, Hong Kong Volunteer Reserve.

Bruce, Robert, Major, R.E.

Cameron, A. T., Captain, R.A.M.C. (mentioned in despatches).

Campbell, L. E., Lieut., A.O.D.

Carruthers, G. M., 2nd Lieut., Lancashire Fusiliers (killed in action).

Carter, A. C., Lieut., The Welsh Regiment.

Caw, William, Corporal, R.E.

Charles, R. P., Lieut.-Colonel Commanding London Regiment.

Christie, J. H., 2nd Lieut., I.W.T.

Claremont, C. L. L., Captain, King's Royal Rifle Corps.

Clement, L., Sergeant, R.E. (M. of M.)

Coates, J. E., Lieut.-Commander, R.N.V.R.

Collett, R. L., Captain, R.A.M.S.

Collins, C. G., Corporal, R.E.

Cowap, J. C., Penang Volunteer Rifles.

Crawford, J., Argyll and Sutherland Highlanders.

Crossley, A. W., Lieut.-Colonel, Staff (mentioned for services).

Cunningham, A., Scottish Rifles.

Davidson, Alexander, Lieut., A.O.D.

Davidson, A. L., Gordon Highlanders.

Davis, O. C. M., Captain, R.A.M.C.

Denney, E. J., Lieut., A.O.D.

Dick, W. D., Captain, R.A.M.C.

Duncan, C. C., Captain, A.O.D.

Eastburn, G. J., 2nd Lieut., Motor Machine Guns.

Eaton, B. J., Lieut., O.C., Malayan Volunteer Infantry.

Elliott, Stanley, Major, General Staff.

Evans, B. S., Lieut., The Queen's (Military Cross).

Evans, H. J., Lieut., R.F.A.

Evers, N., Lieut., R.A.M.C.

Eynon, Lewis, 2nd Lieut., R.E., seconded A.I.D.

Ferrey, C. E. C., Captain, R.A.M.C. (T.F.) (mentioned in despatches).

Finnemore, H., Staff Captain, Chemical Adviser, Northern Command.

Foster, J. A., Captain, East Yorkshire Regiment.

Franklin, A. C., Sergeant, Hong Kong Volunteer Reserve.

Frazer, D. R., 2nd Lieut., Worcester Regiment.

Friend, J. Newton, Lieut., General Service.

Frye, C. C., Major, R.A.M.C.

Gadd, W. L., Lieut.-Colonel, Kent Royal Garrison Artillery (Service Corps).

Garle, J. L., Lieut., R.N.V.R.

Garrett, F. C., Lieut.-Colonel (retired).

Garrett-Smith, Noel, 2nd Lieut., Lancashire Fusiliers.

Gemmell, A., Captain Commandant, Command School of Gas Defence.

Gill, H. W., Horse Artillery (South African Mounted Rifles).

Gimingham, C. T., Captain, R.E.

Golding, J., Captain, R.A.M.C. (T.) (D.S.O., twice mentioned in despatches).

Goldsbrough, H. A., Lieut., R.E.

Goodban, L., 2nd Lieut., Middlesex Regiment.

Goodwin, L. F., Major, Canadian Expeditionary Force.

Greenwood, H. C., Lieut., R.N.V.R.

Haddon, J. W., Singapore Volunteer Rifles.

Hampshire, C. H., Honourable Artillery Company.

Harding, G., Corporal, R.E.

Harrington, A. G., Lieut., R.A.M.C. (T.F.).

Harrison, E. F., Lieut.-Colonel, R.A.M.C. (deceased).

Hawley, Herbert, 2nd Lieut., A.O.D.

Hay, J. G., 2nd Lieut., R.E.

Hayward, Eric, Calcutta Light Horse.

Heap, Harri, Cadet, Manchester University O.T.C.

Heilbron, I.M., Major, A.S.C. (D.S.O.; mentioned in despatches).

Henley, The Hon. F. R., Captain.

Henville, D., Lieut., Hants. Regiment.

Hill, J. R., 2nd Lieut., R.E. (killed in action).

Hills, J. S., Able-Bodied Seaman, R.N.V.R., Anti-Aircraft Corps.

Hind, H. L., Captain, A.S.C.

Hinks, Edward, Lieut., A.O.D.

Hodgson, T. R., Captain, East Lanes. Divisional Transport and Supply Column, A.S.C. (T.F.).

Honneyman, William, Corporal, R.E.

Howard, B. F., Lieut., County of London Regiment (Artists Rifles).

Illingworth, S. R., Lieut., A.O.D.

Innes, A. G., Lieut., R.N.A.S.,

James, B. R., R.N.A.S.

Jones, G. C., Petty Officer, R.N.V.R.

Joy, A. S., Sergeant, R.E. (Ministry of Munitions).

Kent-Jones, D. W., Lieut., R.F.C. (mentioned in despatches).

King, F. E., Lieut., Assistant Chemical Adviser.

King, Herbert, Lieut., A.O.D. (killed in action).

Kirkham, V. H., ('aptain, Unattached List, serving with the Forces in East Africa.

Knight, L., Captain, R.F.A. (mentioned in despatches).

Krall, Hans, Trooper, United Provinces Horse (India).

Ladell, W. R. S., Captain, A.O.D.

Lambourne, H., 2nd Lieut., Sherwood Foresters.

Lang, W. R., Colonel, General Staff (Canada).

Law, D. J., Lieut., R.E.

Law, Robert, Lieut.-Colonel, Australian Engineers.

Leather, J. W., Major, Cheshire Regiment.

Le Sueur, H. R., Major, R.E.

Levy, L. A., Captain, General Service.

Liversedge, S. G., Corporal, R.E.

Lucas, E. W., Chief Petty Officer, R.N.V.R., Anti-Aircraft Corps.

Lucking, H. L., Lieut., R.A.F.

Luff, A. P., Major, R.A.M.C. (T.F).

Makin, C. J. S., Lieut., General List.

Marriott, T. B., Lieut., R.E.

Masters, E. A., Major, A.S.C. (Military Cross).

Matthews, C. P., 2nd Lieut., East Surrey Regiment.

McCombie, H., Major, Chemical Adviser, (D.S.O., mentioned in despatches).

McDavid, J. W., Captain, R.F.A.

McDonald, D., Lieut., General List (Ministry of Munitions).

Mercer, Thomas, Lieut., Hants. Regiment.

Merrett, W. H., Major, R.E. (T.F.), London Electrical Engineers (Territorial Decoration).

Monier-Williams, G. W., Major, Chemical Adviser (Military Cross).

Moor, C. G., Captain, R.A.M.C.

Murphy, Paul, Captain, Commandant, Command Gas School.

Nash, L. M., Captain, Gloucestershire Regiment.

Neville, H. A. D., Captain, Essex (Fortress) R.E.

Newman, L. F., Captain, A.S.C.

Norman, G. M., Captain, A.O.D.

Norris, R. V., 2nd Lieut., Mahrattas.

Norris, W. H. H., Lieut., R.E. (Military Medal).

Nuttall, W. H., Lieut., A.O.D.

Okell, F. L., Singapore Maxim Company.

Page, R. P., 2nd Lieut., Hants. Regiment (T.F.).

Pakes, W. C. C., Captain, South African Field Ambulance.

Paulley, W. M., Durham Light Infantry (T.F.).

Poole, E. S., Captain, A.O.D.

Potter, F. M., Corporal, County of London Regiment (London Scottish).

Price, T. S., Lieut.-Commander, R.N.V.R.

Priest, M., Captain, R.A.M.C.

Race, Joseph, Captain, Canadian Army Hydrological Corps and Advisers on Sanitation.

Raper, H. S., Major, R.A.M.C.

Read, W. J., Lieut., R.A.M.C.

Rideal, E. K., Lieut., General List.

Robison, R., Captain, R.A.M.C. (mentioned in despatches).

Ross, R. St. G., Major, East Lancashire Regiment.

Ryffel, J. H., Lieut., University of London O.T.C. (Medical Section).

Salter, C., Sergeant, Malay States Volunteer Rifles.

Saunders, W. G., Captain and Adjutant, King's Liverpool Regiment (killed in action).

Sawbridge, B. F., 2nd Lieut., City of London Regiment.

Shelton, J., Singapore Volunteer Rifles.

Shepherd, E. H., 2nd Lieut., R.E.

Simmons, T. A., Lieut., A.O.D. Sinnatt, F. S., Captain, Officer Commanding O.T.C.

Slade, R. E., Captain, R.E.

Smeaton, T. F., Lieut., R.E. (Ministry of Munitions).

Smith, A. R., Lieut., A.O.D.

Smith, E. W., R.A.M.C.

Smith, Sir F., Major-General, C.B., K.C.M.G., Army Veterinary Service.

Smith, T. A., Lieut., Lincolnshire Regiment.

Smith, W. R., Colonel, R.A.M.C.

Smithells, Arthur, Lieut.-Colonel, General Staff.

Stanley, Harry, Lieut., Gloucestershire Regiment.

Stevens, M. W., Lieut., A.O.D.

Stone, O. J., 2nd Lieut., R.F.A., (died of wounds).

Stubbs, J. R., Captain, A.O.D.

Summerson, S., Captain, R.A.M.C.

Symons, W. H., Major, R.A.M.C. (T.F.).

Thompson, James, Lieut., General List.

Trotman, S. R., Captain, O.C. University College, Nottingham, O.T.C.

Wade, F., Lieut., R.E. (T.).

Walker, F. G. C., Captain, R.E. (Military Cross).

Walpole, G. S., Captain, A.I.D.

Warner, C. H., Lieut., R.A.M.C.

Wheatley, Robert, Corporal, R.E.

Wheeler, E. G. G., O.T.C.

White, F. D., Lieut., R.E.

Willcox, W. H., Colonel, C.M.G., R.A.M.C. (T.F.).

Wilson, E. J., R.A.M.C.

Wilson, F. J., Captain and Gas Officer to 15th Division.

Wilson, L., Major, O.C., D.W. Supply Column, A.S.C.

ASSOCIATES.

Acland, T. W. G., Lieut., R.E.

Albinson, J., R.E.

Allan, J. L. S., Lieut., King's Own Scottish Borderers (killed in action).

Allen, F. T., Officer Commanding Cadet Corps.

Amoore, R. L., R.A.M.C. (T.F.).

Bagshaw, W. N., Lieut., York and Lancaster Regiment.

Bailey, C. W., Lance-Corporal, Leicestershire Regiment.

Barnett, E. de B., Conducteur Service de Santé Militaire, Ambulance Alpine French Army.

Bassett, H. L., Captain, R.E., Chemical Adviser.

Bate, S. C., O.T.C.

Beard, Edgar, Corporal, R.E.

Beesley, R. M., 2nd Lieut., R.E. (Military Cross).

Bennett, W. G., Captain, R.F.A.

Bevan, A., 2nd Lieut., R.G.A.

Bickerstaff, R., Pioneer, R.E.

Bishop, R.O., 2nd Lieut. (Ministry of Munitions).

Boorman, H. G. T., Sub-Lieut., R.N.V.R.

Bosworth, S. M., Captain, A.O.D.

Bowack, D. A., F.R.

Bracher, A., 2nd Captain, R.A.F.

Braunholtz, W. T. K., R.E.

Bray, G. T., 2nd Lieut., I.W.T.

Brazier, S. A., Lieut., R.N.V.R.

Brekke, L. O., Lieut., E. Yorks. Regiment.

Brown, I. V., O.T.C.

Browning, R. G., Lieut., R.E.

Bruckman, R. T., Captain, Border Regiment.

Brunvee, T. H., Corporal, R.E.

Bull, P. C., Major, Suffolk Regiment (D.S.O., mentioned in despatches).

Bunbury, H. M., O.T.C.

Bunker, S. W., Lieut.-Colonel, Royal Fusiliers, attd. R.E. (mentioned in despatches, Cavalier of the Order of St. Maurice and St. Lazarus).

Burr, A. H., R.E.

Cabell, H. F., R.E.

Callister, C. P., A.I.F.

Campbell, N. P., Captain, R.E. (killed in action).

Cardell, I. S., 2nd Lieut., R.G.A.

Caunce, A. E., King's Liverpool Regiment.

Charlton, James, 2nd Lieut., R.E.

Cheke, T. W., Corporal, R.E.

China, F. J. E., Captain, R.A.M.C.

Chown, C. R., Captain, R.F.A.

Christelow, J. W., Lieut., R.E.

Clark, L. M., Captain, A.O.D.

Clark, R., Squadron-Sergeant-Major, Lothian and Border Horse.

Clark, W. S., Corporal, R.E.

Clarke, A. L. R., Lieut., R.E.

Clarke, F. G., Corporal, R.A.M.C.

Clifford, P. H., Lieut., R.A.F.

Cooke, J. H., Captain, R.G.A.

Cottrall, L. G., Corporal, R.E.

Cousins, F. G., Corporal, R.E. (D.C.M.).

Crawford, F. A. F., Captain, Royal Scots Fusiliers.

Crowther, H. L., Lieut., R.N.V.R.

Crundall, S. F. W., R.E.

Davies, W. Eynon, Cadet, R.F.A.

Dawson, D. S., Corporal, R.E.

Dingwall, A., 2nd Lieut., General List (attd. R.E.).

Dodd, A. H., 2nd Lieut., Unattached List of Officers.

Doidge, R. M., Company-Sergeant-Major, R.E.

Dovey, E. R., Hong Kong Volunteers.

Dunn, R. J., 2nd Lieut., Royal Warwickshire Regiment (reported missing).

Dunsmore, A., Corporal, R.E.

Dyer, A., 2nd Lieut., R.A.F.

Eastburn, W. J. S., Cadet, O.C.B.

Eastick, A. G., King Edward's Horse.

Eastick, F. C.

Eastick, J. C. N., Captain, Commandant, Irish Command Anti-Gas School.

Elliott, J. C., Lieut., R.E. (Military Cross).

Essery, R. E., R.E.

Evans, D. T., Corporal, R.E.

Evans, H. G., 2nd Lieut., O.T.C.

Evans, L. W., Lieut., Machine Gun Corps.

Farmer, E. H., Lieut., Loyal North Lancs. Regiment.

Ferlie, R., R.E.

Fielding, J. F. P., Squadron-Sergeant-Major, County of London Yeomanry.

Forsyth, W. C., R.E.

Frith, J. S., Captain, S. Lancs. Regiment (mentioned in despatches).

Gale, R. C., Lieut., R.G.A. Geake, A., Corporal, R.E.

Geake, F. H., Captain, R.E.

George, H. J., Lieut., Royal Welsh Fusiliers.

Georgi, C. D. V., Lieut., R.E. (mentioned in despatches).

Gilmour, H., 2nd Lieut., South Lancs. Regiment.

Glendinning, W. G., Corporal, R.E.

Gordon, P. F., Sapper, Rangoon Corps, I.D.F.

Gosney, H. W., 2nd Lieut., Rifle Brigade.

Graham, J. T., Friends' Ambulance Unit.

Gray, G., Staff-Lieut. (mentioned in despatches).

Green, S. J., Lieut., R.N.V.R.

Guest, P. H., Lieut., A.O.D.

Hackney, N., Middlesex Regiment.

Haigh. T., Lieut., Royal Dublin Fusiliers (mentioned in despatches).

Hampson, R. E. V., Lieut., R.E.

Hanna, G. F., British Red Cross (active service).

Harris, J. W., 2nd Lieut., Lincolnshire Regiment (died on active service).

Harrison, V. J., Lieut., R.E.

Hastilow, C. A. F., Sergeant, Special Brigade, R.E.

Hatton, A. B., Lieut., Captain, R.A.F.

Hawley, J. W., Lieut., H.L.I.

Hay, N. T., H.L.I.

Haythornthwaite, A., 2nd Lieut., R.F.A.

Heasman, B. R., Sergeant, R.E.

Henesey, F., Sergeant-Instructor, R.E.

Hewitt, J. A., Major, Chemical Adviser.

Hibbert, John, Captain, R.A.F.

Hickson, B., Lieut., Yorkshire Regiment.

Higson, G. I., R.E.

Hill, W. R., O.T.C.

Himus, G. W., Sergeant, R.E.

Hobson, A. B., Captain, Commandant, Gas School.

Hodgkin, A. E., Captain, Chemical Adviser.

Hopkins, D. G., Corporal, R.E.

Hothersall, W. C., R.F.

Howell, O. R., Lieut. and Quarter-Master-Sergeant, London Regiment.

Howells, O. R., London Regiment.

Hudleston, L. G., Captain (Military Cross).

Hussey, A. V., Captain, R.E. (Order of St. Stanilas and Croix de Guerre).

Inman, W. N., Lieut., R.E., Divisional Gas Officer.

Islip, H. T., Cadet, R.G.A.

James, T., Staff Captain, Commanding Officer Cadets.

Jenkin, C. O. F., 2nd Lieut., Suffolk Regiment.

Jobling, E., Captain, R.E.

Johnson, J. C., Lieut., A.O.D.

Jones, G. J., Lieut., South Wales Borderers.

Jones, J. I. M., O.T.C.

Jones, S. J., Lieut., South Lancs. Regiment (died of wounds).

Joyner, R. A., Captain, R.S.F.

Kay, H. D., Temp. Captain, Commandant, Command Gas School (mentioned in despatches).

King, John, Captain, Lincolnshire Regiment (mentioned in despatches).

Kipping, S. P., O.T.C.

Lane, K. W., 2nd Lieut., R.F.A.

Laughton, E. M., Trooper, S.A. Mounted Rifles.

Laughton, F. E., 2nd Lieut., Queen's Own Cameron Highlanders (Military Cross).

Laxton, F. C., Sub-Lieut., R.N.V.R.

Le Brocq, L. F., Lance-Corporal, London Regiment.

Lea, H. T., Staff-Lieut., Chemical Adviser.

Levingston, H. G., 2nd Lieut., A.S.C.

Lewis, J. S., 2nd Lieut., South Wales Borderers.

Linzell, L., Lieut., A.V.C.

Llewellyn, B., Lieut., A.O.D.

Loaring, W. C., Lieut., R.A.M.C.

Lorains, J. P., Lieut., R.E. (Military Cross).

MacCulloch, A. F., Lieut., R.F.A.

Macintyre, E. G., Sub-Lieut., R.N.V.R., attd. R.N.A.S.

Maclean, A., Corporal, R.E.

McCall, R., Corporal, R.E.

McCulloch, A., R.A.M.C.

McLachlan, T., Corporal, R.E. (D.C.M.).

McQueen, J., R.E.

Marks, H. P., Seaman, R.N.

Marks, L., 2nd Lieut., R.E.

Marples, M. E., Major, A.S.C.

Marshall, F. W. D., R.A.M.C.

Martin, E. C., 2nd Lieut., R.E.

Matthews, G. L., Captain, Officer Commanding Sanitary Section, R.A.M.C. (mentioned in despatches).

Mendoza, E., Essex Regiment, attd. R.A.F. (deceased).

Merheim, G., Quarter-Master-Sergeant, R.E.

Messenger, W. D., R.E.

Middleton, H., Petty Officer, R.N.A.S.

Miller, J. B., Captain, R.E.

Monteith, W., R.E.

Moore, E. W. J., Sergeant, R.A.M.C.

Moore, G. W., 2nd Lieut., R.G.A. (killed in action).

Morris, Alfred, Lieut., A.O.D.

Morris, I. P., Captain, R.E.

Napier, O. J. W., Lieut. (Air Board).

Newbery, G., Lieut., R.E.

Newton, A. U., 2nd Lieut., Border Regiment.

Nobbs, H., Captain, Northamptonshire Regiment.

Northing, H. C., Seaman, R.N.V.R.

Northover, R., Captain, Lancashire Fusiliers.

Norton, H. R., Corporal, R.E.

Nurse, E. H., Lieut., R.A.F.

Page, H. J., Captain, R.F.A. (twice mentioned in despatches).

Painter, G. M., Captain, Suffolk Regiment.

Park, R., Captain, R.A.M.C.

Parker, L. H., Lieut., R.E.

Parry, R. E., Sergeant, A.I.F.

Pattison, J. W. H., Major, Scottish Rifles (T.F.).

Paul, Hamilton, Lieut., R.E.

Pearce, L. R. B., Lieut., R.A.F.

Pelling, A. J., Captain, R.E. (D.S.O., Military Cross).

Pemberton, E. S., 2nd Lieut., I.W. & D., R.E.

Perry, G. A., Hon. Lieut.

Phillips, H. A., Friends' Ambulance Unit (Red Cross).

Pickard, C. E., Divisional Gas Officer, R.E.

Pickard, H., Captain, Cheshire Regiment.

Powell, D., Captain, R.E., Divisional Gas Officer.

Probert, M. E., Leading Mechanic, R.N.A.S.

Pullman, A. D. R., Devon Cyclists.

Purdon, A. O., Lieut., R.E.

Rait, P. W., Lieut., R.F.A.

Raper, H. S., Major, R.A.M.C.

Rawling, S. O., Cadet, R.F.A.

Ray, F. M., Lieut., Special Brigade, R.E.

Raymond, L. W., Lieut., R.E.

Rayner, E. A., Corporal, R.E.

Reynard, H. C., Captain, Chemical Adviser.

Ritchie, W. S., R.N., Experimental Station.

Robertson, G. S., O.T.C.

Robertson, S., Royal Enniskilling Fusiliers.

Rodger, L. K., Lieut., R.E.

Roos, C. B., Lieut., Gas Officer.

Ross, J. S., Lance-Corporal, R.A.M.C.

Rudge, E. A., Royal West Surrey Regiment.

Rydings, E. P., Sub-Lieut., R.N.V.R.

Scharff, G. E., R.E.

Scott, A. W., 2nd Lieut., R.G.A.

Sellars, E. L., Captain, R.E. (Military Cross).

Sewill, J. W., Lieut., Special Brigade, R.E.

Shalleross, A., Observer, R.F.C.

Sheldon, W., Royal Fusiliers.

Shipston, G. T., Captain, Officer, Cadet Battalion.

Silvester, W. A., O.T.C.

Simmons, W. H., 2nd Lieut., Bedfordshire Regiment.

Slater, L., Lieut., R.E.

Smith, F. W., Lieut., Bedfordshire Regiment.

Smith, G., A.M. II., R.N.A.S.

Solomon, J. B., Oxford and Bucks Light Infantry, Staff-Captain, R.F.C.

Somer, A. J., Sergeant, R.A.M.C.

Spiers, C. W., Sergeant, R.E.

Stedman, E., Lieut., R.G.A.

Stern, H., Corporal, Middlesex Regiment.

Stickings, R. W. E., Captain, R.A.M.C.

Stocks, H. H., Corporal, R.E.

Stone, H. G., O.T.C.

Sugden, J. N., Captain, R.E.

Sugden, S., R.E.

Taylor, F., Lieut., R.E.

Taylor, W. C., Captain and Adjutant, R.F.A.

Templeman, W. H., Lieut., Inspecting Ordnance Officer.

Thin, R. G., Captain, Divisional Gas Officer.

Thomas, W., Lieut., Cheshire Regiment (prisoner of war).

Thurston, F. S., 2nd Lieut., General List.

Todd, E. H., R.E.

Trotter, W., Lieut., Northumberland Fusiliers.

Tryhorn, F. G., Sub-Lieut., R.N.V.R.

Valentine, A. H., Public Schools Battalion.

Vallance, R. H., R.E.

Vernon, Harold, Corporal, R.E. (killed in action).

Vickers, W., Sergeant, R.E.

Walker, Eric, Captain, R.E.

Walker, F. H., Captain.

Ward, P. J., Sapper, Indian Defence Force.

Waters, P. W., Lieut., R.E. (Croix de Guerre).

Watson, H. B., Pioneer, R.E.

Watson, H. L., Sergeant, R.E.

Watson, J., Captain, Commandant Gas School (Military Cross).

Watt, J. J., 2nd Lieut., Inland Water Transport.

Wearing, C. M., Corporal, R.E. (M. of M.).

Webb, H. M., Captain, R.E.

Webb, H. W., 2nd Lieut., Royal Warwickshire Regiment.

Welsford, G. H., Captain, East Yorks. Regiment.

West, J. D. F., 2nd Lieut., R.A.F.

Weston, E. P., Lieut., Northumberland Fusiliers.

Weyman, G., Lieut., General Reserve of Officers.

White, J. C., Captain, Border Regiment (Military Cross).

Whitworth, C. W., R.N.A.S.

Wilkie, A. L., Captain, York and Lancaster Regiment (mentioned in despatches).

Williams, E. C., Captain, East Yorks. Regiment.

Williams, P. N., R.E.

Willson, F. G., Lieut. (M. of M.).

Wilson, A., 2nd Lieut., Leinster Regiment.

Wilson, D. M., Captain, R.E. (Military Cross, Croix de Guerre, Chevalier de l'Ordre de la Couronne).

Woodhead, A. E., Captain, R.A.M.C.

Wright, Thomas, 2nd Lieut., Royal Berkshire Regiment (killed in action) Wynn, W. O. R., 2nd Lieut., R.E.

STUDENTS.

Abelson, P., R.A.M.C.

Archibald, J. D., Lieut., Essex Regiment (died of wounds).

Atkinson, C., Cadet, R.F.C.

Bachrach, R., Lance-Corporal, London Electrical Engineers.

Bakes, W. E., R.E.

Barber, H. H., R.N.A.S.

Barclay, A., R.E.

Barry, W. R., Lieut., R.N.D.

Beck, C. W., A.S.C.

Beecroft, S. B., R.N.D.

Benstead, T. B., A.S.C.

Bentley, T. L. J., Royal West Surrey Regiment.

Berridge, J. D., Lieut., R.E.

Bishop, J. E., Captain, East Lancs. Regiment (killed in action).

Bowyer, E. G., 2nd Lieut., Cambridgeshire Regiment.

Boyd, G., 2nd Lieut., R.E. (killed in action).

Bramer, J. D. S., Captain, Royal Warwickshire Regiment.

Brisley, C. W., 2nd Lieut., Irish Guards.

Brooke, H. W., Captain, East Yorks. Regiment.

Brown, F. S., Artists' Rifles.

Brown, L. N., 2nd Lieut., R.E.

Burns, A. C., 2nd Lieut., Royal Scots, attd. R.E.

Butcher, C. E., Lieut. (reported missing; assumed dead).

Butler, F. H. C., Captain, Hampshire Regiment, Asst. Provost-Marshal, Mesopotamian E.F.

Buttrick, H. P., Lieut., R.E.

Carlisle, W. F., Corporal, R.E.

Carson, S. B., 2nd Lieut., Royal Scots Fusiliers.

Causer, L. W., Cadet, R.A.F.

Chalmers, F. G. D., Corporal, R.E.

Chitty, E. C., 2nd Lieut., R.E.

Clarke, L. H., Corporal, R.E.

Clement, J., Captain, Hampshire Regiment.

Cohen, E. H., R.N.A.S.

Collen, F. D., Major, Notts. and Derby. Regiment (Military Cross).

Condrup, C. O., R.E.

Cooke, F. C., Corporal, Water Supply Branch.

Cooper, H. E., Lieut., R.E.

Cooper, William, 2nd Lieut., R.E. (Military Cross).

Corby, F. J., Cadet, R.E.

Cowlishaw, G. D., Corporal, York and Lancaster Regiment.

Crawford, A. B., A.O.C.

Cunliffe, P. W., Flight Sub-Lieut., R.N.

Dalton, John, Captain, London Regiment (Military Cross).

Davey, W. S., 2nd Lieut., A.O.D.

Davidson, G., H.L.I.

Dawn, T. S., Pioneer, R.E.

Day, F., 2nd Lieut., R.G.A.

Dennett, S. H., Birmingham Battalion.

Doidge, H. F., Major, A.S.C.

Doughty, J. N., Durham Light Infantry.

Drummond, A. J., Lance-Corporal, Highland Cyclist Battalion.

Eastman, W. V., 2nd Lieut. (killed in action).

Farrer, W. J. G., London Electrical Engineers.

Ferrier, G. S., Area School of Gas Defence.

Figg, E. F., Sergeant, R.E.

Fletcher, D. N., Pioneer, R.E.

Follows, G. S., Lieut., King's Liverpool Regiment.

Forrester, Charles, Corporal, R.F.C.

Fraser, F. J., Liverpool Scottish.

Galletly, C. H., Corporal, R.E.

Garland, T., Corporal, R.E.

Garnett, K. G., Lieut., R.F.A. (Military Cross, Croix de Guerre; died of wounds).

Gibbs, G. Harcourt, Lieut., R.G.A.

Gibson, J., Corporal, R.E.

Gibson, S., 2nd Lieut., A.C.C.

Gold, A. K., R.N.A.S.

Goodall, G. F., Infantry Battalion.

Goodwin, S. W., 2nd Lieut., The Border Regiment (Military Cross: killed in action).

Greaves, R., 2nd Lieut., R.G.A.

Griffiths, J. A., R.N.A.S.

Hand, P. G. T., Sergeant, R.E.

Haselhurst, H. W., Major, Northumberland Fusiliers.

Hatfield, C. G. M., Captain, Middlesex Regiment.

Hayward, C. O., 2nd Lieut., Lincolnshire Regiment (died on service).

Hemmings, W. G., 2nd Lieut., Essex Regiment.

Henry, John, Captain, Royal Scots Fusiliers.

Hind, S. R., Private, K.S.L.I.

Hislop, S. L., Corporal, R.E.

Hoff, R. W., R.E.

Hofmeyr, R., 2nd Lieut., King's Own Yorkshire Light Infantry, attd. R.F.C. (died on service).

Holt, H. D. G., 2nd Lieut., Royal Fusiliers.

Hornby, A. J. W., Acting-Captain, R.G.A.

Hunwicke, R. F., 2nd Lieut., A.S.C.

Jackson, S. R., Cadet, O.C.B.

Jones, R. A., R.E.

Joynson, George, Lancashire Fusiliers.

Kind, R. G., Corporal, R.A.M.C. (died on service).

King, F. J., R.N.A.S.

Knaggs, John, 2nd Lieut., R.E.

Lever, D., Corporal, R.E.

Lynch, G. Roche, Temp. Surgeon, Royal Naval Hospital.

MacCulloch, A. F., Lieut., R.F.A.

MacDougall, D., Corporal, R.E.

Mackay, R. L., 2nd Lieut., Argyll and Sutherland Highlanders.

Mackenzie, P., Captain, R.E.

Mann, D., Suffolk Regiment.

Matthews, N. L., O.T.C.

Miller, C. J., R.E.

Mitchell, C. A. D., Lieut., Devon Regiment.

Morrison, N., R.E.

Muggeridge, H. D., 2nd Lieut., Royal Sussex Regiment.

Mumford, E. M., Captain, Lancashire Fusiliers.

Murray, K. F. M., Captain, London Regiment.

Needs, F. E., Lieut., R.F.A.

Nelson, W. R. F., University of London O.T.C.

Newitt, L. D., Lieut., Royal Artillery.

Nixon, C. J., Lieut., Bedfordshire Regiment, attd. R.F.C. (died on service).

Norman, D. J., 2nd Lieut., R.G.A.

Oates, F., Sergeant, R.E.

Parker, H. V., 2nd Lieut., R.F.A.

Paterson, T. McI., Corporal, R.E. (died of wounds).

Patterson, A. A., 2nd Lieut., Border Regiment (died of wounds).

Pechey, W. G., Corporal, Leicester Regiment.

Phillips, R. J., R.N.A.S.

Phillips, S. B., R.N.A.S.

Pollard, A. G., Captain, R.E.

Pollard, H. E., Friends' Ambulance Unit.

Potter, J. H., Corporal, R.E. (reported missing).

Prince, J. S., Lieut., London Regiment (killed in action).

Print, H. C., 2nd Lieut., R.A.F.

Richards, E. M., Corporal, R.E.

Roberts, E. J., Sub-Lieut., R.N.V.R.

Robertson, J. A., Captain, H.L.I.

Robinson, A. A., Lieut., R.G.A. (killed in action).

Robson, J. C., R.E.

Rogers, E. W., Lieut., West Riding Regiment.

Ross, Kenneth, 2nd Lieut., Royal Irish Rifles (killed in action).

Ruddock, F. A., Yorks. and Lancaster Regiment.

Rudolf, M. E. S., Corporal, R.E.

Sadler, F., 2nd Lieut., Durham Light Infantry and R.F.C. (reported missing).

Sanderson, F. W., Lieut., R.E. (killed in action).

Senior, Alan, Captain, R.F.A.

Sewell, J., 2nd Lieut., R.F.C.

Smith, A. M., Lance-Corporal, Gordon Highlanders.

Smith, C. M., Captain, R.A.M.C.

Smith, D. G., R.N.A.S.,

Smith, F. W. H., R.N.A.S.

Smith, G. E., 2nd Lieut., Argyll and Sutherland Highlanders (killed in action).

Smith, J. S., 2nd Lieut., Loyal North Lanes. Regiment (died on service).

Smith, L. P., 2nd Lieut., R.G.A. (deceased).

Snow, W. A., Corporal, R.E.

Southerton, L. C., R.N.A.S.

Spicer, J. I., Captain, East Lancs. Regiment.

Stearn, J. H., Lieut., Durham Light Infantry (D.S.O.; Croix de Guerre; killed in action).

Steele, A. R., Captain, Scottish Rifles (died of wounds).

Stephens, H. C., Lieut., R.F.C.

Stewart, G. S., 2nd Lieut., R.F.C.

Stewart, R. F., 2nd Lieut., R.F.A.

Stockdale, E. L. J., Lieut., Lancashire Fusiliers (killed in action).

Suckling, E. V., Sergeant, Mobile Analytical Laboratory, R.A.M.C.

Taylor, A. J., 2nd Lieut., Royal Artillery.

Taylor, C. B., Captain, R.E.

Taylor, H. A., Hong Kong Volunteers.

Thompson, S. G., Captain, West Kent Yeomanry.

Thomson, M. S., O.T.C.

Tye, A. G., H.A.C. (died of wounds).

Ward, E. C., Captain, A.S.C.

Webster, H. G., Sergeant, R.E. Whinfrey, C. G., Lieut., British Inspection Dept.

Whitham, R. P. M., Lieut., R.F.C. (Military Cross).

Whitworth, A. B., Corporal, R.E.

Wigfield, J. B. C., 2nd Lieut., R.E.

Williams, E. H., Queen's Westminster Rifles.

Williamson, C. G., 2nd Lieut., Royal Warwickshire Regiment (killed in action).

Winbolt, E. A., R.N.A.S.

The Register.

At the meetings held in July and October, 1918, the Council elected 57 new Fellows; 26 Associates were elected to the Fellowship; 267 Associates were elected; and 19 new Students were admitted. One Fellow has been re-elected. The names of Members and Students elected in November will be published in Part I., 1919. The Institute has lost 8 Fellows, 2 Associates, and 1 Student by death.

New Fellows.

- Andrew, George William, M.Sc. (Manc.), Ironhirst Peat Factory, Ruthwell R.S.O., Dumfriesshire. (Chief Chemist, Messrs. Crossley Bros., and Wetcarbonizing Co. Research.)
- Austin, Percy Corlett, M.A. (Cantab.), D.Sc. (N.U.I.), 58, Clyde Road, West Didsbury, Manchester. (Chief Chemist, National Filling Factory. Research.)
- Bain, Professor James Watson, B.A.Sc. (Toronto), The University, Toronto, Canada. (Professor of Caemical Engineering, University of Toronto.)
- Bolam, Herbert William, B.Sc. (Edin.), Ph.D. (Leipzig), Queen Margaret College, The University, Glasgow. (Lecturer-Examiner in Chemistry, University of Glasgow. Research.)
- Bone, Professor William Arthur, D.Sc. (Manc.), Ph.D. (Heid.), F.R.S., Montrose, Harpenden Road, St. Albans. (Professor of Chemical Technology, Imperial Coll. of Sc. and Tech.)
- Bowles, Percy Ewart, Ph.D. (Heid.), Merok, Christchurch Crescent, Radlett, Herts. (Manager and Research Chemist, British Aeroplane Varnish Co.)
- Brame, Professor John Samuel Strafford, 5, Vanbrugh Fields, Blackheath, London, S.E. 3. (Professor of Chemistry, Royal Naval College, Greenwich. Research.)
- Brownsdon, Henry Winder, M.Sc. (Vict.), Ph.D. (Jena), 109, Oxford Road, Moseley, Birmingham. (Chemist, King's Norton Metal Co.)
- Butler, Thomas Howard, Ph.D. (Jena), M.Sc. (Bris.), Brecon Lodge, Brecon Road, Westbury-on-Trym, Bristol. (Director, Messrs. William Butler & Co. (Bristol), Ltd.)
- Cain, John Cannell, D.Sc. (Manc.), Ph.D. (Tubingen), 24, Aylestone Avenue, Brondesbury Park, London, N.W. 6. (Chief Chemist, British Dyes, Ltd. Research.)

- Cameron, Captain Alexander Thomas, R.A.M.C., M.A., B.Sc., No. 1 Water Tank Co., B.E.F., France. (Assistant Professor in Physiology, University of Manitoba.)
- Campbell, Andrew, The Coppice, Beckenham, Kent. (Advisory Chemist, Burmah Oil Co. and Anglo-Persian Oil Co.)
- Cocking, Thomas Tusting, c/o The British Drug Houses, Ltd., 22-30, Graham Street, City Road, London, N. 1. (Head of Laboratories, British Drug Houses, Ltd.)
- Coleman Walter Henry, 1, Athole Gardens, Newlands, Glasgow. (Director, Standard Chemical Products Co. and British Phenoloids, Ltd. Research.)
- Colgate, Reginald Thomas, D.Sc. (Lond.), A.C.G.I., D.I.C., 25, Denmark Road, Reading. (Chief Works Chemist, Messrs. Huntley and Palmer, Ltd. Research.)
- Collitt, Bernard, 15, Massey Road, Lincoln. (Chief Chemist, Messrs. Ruston and Hornsby, Ltd.)
- Cruikshanks, George Shevas, Ph.D. (Leipzig), 16, Grantly Gardens, Shawlands, Glasgow. (Lecturer and Chief Demonstrator, Dept. of Technical Chemistry, Royal Technical College, Glasgow.)
- Davidson, John Howard, M.Sc. (Manc.), 71. Marlborough Road, Sheffield. (Lecturer and Demonstrator, Dept. of Glass Technology, Sheffield University. Research.)
- Duncan, James Bothwell, B.Sc. (Dun.), 50, Hotspur Street, Tynemouth. (Works Manager, Messrs, Cookson & Co., Newcastle, Research.)
- Emmett, William Gidley, M.A. (Cantab.), No. 6, Blackbank, Gretna, Scotland. (Section Manager, H.M. Factory.)
- Fitch, Arthur James, 20, Empress Road, Derby. (Laboratory Director and Senior Analyst, British Cellulose and Chemical Manufacturing Co., Ltd.)
- Fleck, Alexander, D.Sc. (Glas.), 26, Manor House Road, Jesmond, New-castle-on-Tyne. (Chief Chemist, Castner-Kellner Alkali Co.)
- Garrett, Lieut-Colonel Frederic Charles, D.Sc. (Dun.), M.Sc. (Vict.), 27, Fern Avenue, Newcastle-on-Tyne. (Senior Lecturer in Chemistry, Armstrong College, Newcastle-on-Tyne.)
- Gaul, Ernest George, M.Sc. (Manc.), The Chemical Department, The University, Manchester. (Lecturer in Bacteriological Chemistry, Manchester University.)
- Hamilton, James, 9, Esplanade Avenue, Whitley Bay. (Chief Chemist, Messrs. Sir W. G. Armstrong, Whitworth & Co., Ltd.)
- Harvey, Thomas Featherstone, 5, Park Hill Road, Chingford, London, E. 4.
 (Chief of Analytical and Research Laboratories, Messrs. Thomas Morson & Sons, Ltd.)
- Heriot, Thomas Hawkins Percy, 48, Bank Street, Hillhead, Glasgow. (Lecturer on Sugar Manufacture, Royal Technical College, Glasgow.)

- Kaye, John, M.A., B.S., (Glas.), Westerfield, Perth. (Research Chemist, Messrs. John Moncrieff, Ltd., Glass Manufacturers.)
- Lloyd, Lorenzo Lyddon, Ph.D. (Bern.e, Technical College, Bradford.
- Luck, Alfred Courtenay, 25, de Mayo 611, Buenos Aires, Argentina. (Chemist, Sansinena Freezing Co., and Chief Chemist, Pacific Railway Co.)
- MacCallum, Douglas Archibald, 93, Hope Street, Glasgow. (Consulting Chemist. Research.)
- McCandlish, David, 22, Ayresome Avenue, Roundhay, Leeds. (Chemist and Asst. Brewer, Messrs. J. Tetley & Son, Ltd., Leeds.)
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- Moore, Charles Watson, M.Sc. (Manc.), Ph.D. (Munich), Grappenhall Cottage, Grappenhall, Cheshire. (Research and Technical Chemist, Messrs. Crosfield & Sons, Ltd.)
- Nesbitt, Cosby Thomas, A.R.S.M., 18, Montrose Road, Sheffield. (Chief Chemist, Messrs. William Jessop & Sons. Research and Inventions.)
- Newman, Captain Leslie Frank, A.S.C., M.A. (Cantab.), Downing College, Cambridge. (Advisory Appointment, Board of Agriculture Development Scheme. S.)
- Nolan, Thomas Joseph, B.A., (R.U.I.), D.Sc. (N.U.I.), 51, Sorbie Road, Ardrossan, Ayrshire. (Research, Nobel's Explosives Co.)
- O'Shea, Professor Lucius Trant, M.Sc. (Lond.), 30, Whitworth Road, Ranmore, Sheffield. (Professor of Applied Chemistry, Sheffield University.)
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- Rec, Alfred, Ph.E. (Berne), 15, Mauldeth Road, Withington, Manchester. Renwick, Frank Forster, Sunnyside, Weald Road, Brentwood, Essex.
- (Chief Chemist, Messrs. Ilford, Ltd. Inventions.)
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- Shelton, Arthur John, A.C.G.I., 10, Park Road, Clydach, S.O., Glam. (Mond Nickel Co.)
- Short, Andrew, B.Sc. (Dun.), 23, Hotspur Street, Tynemouth. (Works Manager, Messrs. Cookson & Co.)
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- Taylor, James McLean, Tynevale, Groes Road, Cressington, Liverpool. (Chief Analyst, Central Laboratory, United Alkali Co. Research and Patents.)
- Taylor, Norman, B.Sc. (Manc.), Emlyn House, Bryn Caerau, Llanelly, S. Wales. (Chief Superintendent, Acids Section, H.M. Factory, Pembrey. Research.)

Thompson, John Thomas, M.Sc. (Leeds), Knostrop Sewage Works, Leeds. (Manager, Knostrop Sewage Works.)

Titherley, Arthur Walsh, B.Sc. (Vict.), Ph.D. (Heid.), The Tower, Llangollen, N. Wales. (Chief Chemist, Messrs. R. Graesser, Ltd. Research.)
Tullo, James Wilson, B.Sc. (Edin.), St. Brendan's Coolock, Co. Dublin,

(Research Chemist, Messrs. Guinness & Co.)

Turnbull, Andrew, Ph.D. (Heid.), 18, Hackin's Hey, Liverpool. (Consulting Chemist, Leather Industry; War Work on Tanning Extracts. Research.)

Weston, Frank Edwin, B.Sc. (Lond.), 29, Sibella Road, Clapham, London, S.W. 4. (Head of Chemical Department, Polytechnic, Regent Street.)

Widdows, Miss Sybil Taite, B.Sc. (Lond.), Arlsworthy, Nether Street, Church End, Finchley, London, N. 3. (Joint Charge of Chemical Dept., and Lecturer in Inorganic Chemistry, London School of Medicine for Women

Wilbraham, Evelyn ('aryl Bootle, Ph.D. (Leipzig), 28, Ovington Square, London, S.W. 3. (Superintendent, H.M. Factory, Rainham.)

Williams, William Arthur, 19, Craiglockhart Terrace, Edinburgh. (Works Manager, North British Rubber Co. Patents.)

Young, John Henry, B.Sc. (Vict.), 58, Queensborough Gardens, Hyndland, Glasgow. (Cassel Cyanide Co. Inventions.)

Fellow Re-elected.

Ferguson, William Bates, M.A. (Oxon.), K.C., 48, Compayne Gardens, London, N.W. 6.

Associates Elected to Fellowship.

Allen, William Stow, 21, Montpelier Park, Edinburgh.

Boyd, Alexander John, No. 8, Lancaster Court, Newman Street, Oxford Street, London, W.

Bracewell, Geoffrey Alfred, 17, Farcliffe Terrace, Bradford.

Bramley, Arthur, D.Sc., A.R.C.S. (Lond.), Blenheim, 50, New Hey Road, Huddersfield.

Butler, Gerald Snowden, B.A. (Oxon.), Aruvankadu, Nilgiri Hills, S. India. Denington, Richard Charles, 69, Dover Road, Wanstead Park, London, E. 12.

Dick, James, Jun., c/o Canadian Explosives Co., Ltd., Beloeil Station, P.Q., Canada.

Douglas, John Robert, A.R.C.S.I., 102, Argyle Road, Saltcoats, Ayrshire.

Gray, James Ramsay, H.M. Factory, Site B., Oldbury, nr. Birmingham.

Greene, Stanley Gordon, Fairford, Penn Road, Beaconsfield, Bucks.

Guthrie, Francis Clint, B.A. (Cantab.), The Roscote, Heswell, Cheshire.

Hepworth, Harry, B.Sc. (Lond.), Messrs. Nobel's Explosives Co., Ltd., Ardeer Factory, Stevenston, Ayrshire.

Hopkins, Reginald Haydn, B.Sc. (Birm.), 320, Rotton Park Road, Birmingham.

Hopper, Isaac Vance, A.R.C.S.I., c/o British Dyes, Ltd., Huddersfield.

Legg, David Alliston, 40, Nanton Avenue, Rosedale, Toronto, Canada.

Lumsden, Colin Henry, B.Sc. (Lond.), Homelea, Sandcliffe Road, Erith, Kent.

Pearson, Archibald Ramsden, B.Sc., A.R.C.S. (Lond.), The Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2.

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Porter, James Walker, A.R.C.S.I., S. West 13, Gretna Township, Gretna, Scotland,

Raper, Major Henry Stanley, D.Sc. (Vict.), The School of Medicine, Thoresby Place, Leeds.

Roberts, Caryl Cameron, M.A. (Cantab.), 19, Watling Street, Canterbury.

Stokes, George Alfred, 60, Parkhill Road, Hampstead, London, N.W. 3.

Stroud, Sidney Hartnett, Government Chemical Laboratory, Brisbane, Australia.

Taylor, Edgar Reuben, A.R.S.M., c/o Messrs. W. H. Allen, Sons & Co., Ltd., Bedford.

Tucker, Stanley Horwood, M.Sc., A.R.C.S. (Lond.), 68, Charlwood Road, Putney, London, S.W. 15.

Wheeler, Edward George Gidleigh, B.Sc. (Lond.), 59, Cranwich Road, Stamford Hill, London, N. 16.

New Associates (by examination).

Brown, Robert Lidwill, A.R.C.S.I., 69, Paulet Road, Camberwell, London, S.E. 5.

Caird, Miss Ella Lyndhurst, Regent's Park Road, Finchley, London, N. 3.
Craven, William Henry, B.Sc. (Lond.), 44, Melton Road, West Bridgford,
Nottingham.

Associates.

M.=Munitions. S.=Naval, Military, or Air Service. I.I.=Intermediate

Examination of the Institute.

Allan, David Lyall, B.Sc. (Liv.), Dynamite Factory, Modderfontein, Transvaal, S. Africa. [S.; M.; I.I.]

Allen, Frederick Thomas, M.Sc. (Dun.), M.A., (N.U.I.), Ramsey Grammar School, Huntingdon. [Head Master, Teacher of Chemistry, Inventions, Government Laboratory.]

- Andrews, John, B.Sc. (Lond.), 4, Casimir Road, Harold's Cross, Dublin. [Research Chemist, Guinness Research Lab.]
- Atkinson, Harold, B.A. (Oxon.), 29, Greenhill Crescent, Harrow, Middlesex. [Gov. Lab. and Gov. Lab. Supply Reserve Depot.]
- Baldwin, Sam, M.Sc. (Vict.), Sandholme, St. George's Avenue, Dovercourt.
 [M.]
- Barker, James Stanley, 70, Senior Street, Mold Green, Huddersfield. [Wigan Mining and Tech. Sch.; thirteen years' experience; M.; Research.]
- Barr, James, B.Sc., A.R.C.S. (Lond.), Hillside, Mellor, Derbyshire. [M.; Research.]
- Barrett, John Douglas, B.Sc. (Leeds), c/o Mrs. Craven, 43, Healdfield Road, Castleford, Yorks. [Chief Chemist, Chemicals and Dyewares, Ltd.; Research.]
- Bassett, ('aptain Harold Llewelyn, R.E., B.A. (Cantab.), Wincanton, Somerset. [S.]
- Beard, Edgar, B.Sc. (Edin.), No. 3, Staff Quarters, East Riggs, Dumfriesshire. [S.; M.]
- Bearder, Ernest Arthur, B.Sc. (Leeds), Stonegate, Highfield, Sale, Cheshire. [Research; Dyes.]
- Bennett, Captain William Gordon, M.Sc. (Leeds). B.E.F. [S.]
- Benson, Miss Margaret, M.Sc. (Manc.), 13, Bates Street, Longsight, Manchester. [Research.]
- Bevan, 2nd Lieut, Abram, B.Sc. (Wales), A.R.C.S. (Lond.), Woodlands, Gowerton, Glam. [Science Master; S.]
- Bickerstaffe, Robert, A.M.S.T., 5, Chiswick Street, Carlisle. [S.; M.]
- Billbrough, Sidney, B.Sc. (Lond.), The Gables, Knottingley, Yorks. [Tar Distillation; Research.]
- Bird, John Cecil, B.Sc. (Lond.), 116, Bradford Road, Huddersfield. [Science Master: Research: Dves.]
- Blackburn, Rudolph Isaac, B.A. (Cantab.), B.Sc. (Lond.), 8, Dunlace Road, Clapton, London, E. 5. [Electric Lamp Works.]
- Blakey, George Alfred, 20, Saltburn Place, Bradford, [Bradford Tech. Coll.: Works Manager, Dve Works.]
- Blatchford, Alfred Samuel, M.Sc. (Dun.), 11, Normanton Terrace, New-castle-on-Tyne. [Lecturer in Agricultural Chemistry, Armstrong College; Research.]
- Boas, Isaac Herbert, B.Sc. (Adelaide), M.Sc. (Perth), Technical School, Perth, W. Australia. [Research; M.]
- Boswell, Arnold, B.A. (Cantab.), 145, Cheshire Road, Smethwick, Staffs. [M.] Bosworth, Captain Stewart MacGregor, B.Sc. (Lond.), 56, Coventry Road, Bedworth, Nuneaton. [Research; S.]
- Bowyer, Arthur Stewart, M.Sc. (Manc.), The Woodlands, Chelford, Cheshire, [Works Chemist in charge.]

- Boyle, Robert Alexander, B.Sc. (Queensland), H.M. Factory, Avonmouth, nr. Bristol. [M.]
- Bracher, Captain André, Battleton, Dulverton, Somersetshire. [Regent Street Polytech.; eleven years' experience; S.]
- Braunholtz, Walter Theodore Karl, B.A. (Cantab.), Goslar, Adams Road, Cambridge. [M.]
- Brekke, Lieut. Lorentz Oliver, B.Sc. (Leeds), 193, Coltman Street, Hull. [S.; II.]
- Brennan, Arthur, B.Sc. (Dun.), Technical Institute, Newport, Mon. [Eighteen years' experience.]
- Bridge, Fred, A.R.C.S., 39, Lyndhurst Road, Highams Park, Chingford, London, E. 4. [Chief Chemist, Messrs. W. T. Glover & Co., Ltd.]
- Brown, Hugh Browning, Maxwellton, Brookfield, by Johnstone. [Roy. Tech. Coll., Glasgow; twelve years' experience; Research.]
- Bruce, John Ronald, M.Sc. (Liv.), British House, Acrefair, Ruabon, N. Wales. [Research, R. Graesser, Ltd.]
- Brunyee, Corporal Thomas Herbert, B.Sc. (Sheff.), Penketh School, nr. Warrington, Lancs. [Science Master; S.]
- Bult, Herbert John, 63, Addiscombe Road, Groydon, Surrey. [Finsbury Tech. Coll.; A:I.D.]
- Burrows, Edward Lister, 9, Hounslow Road, Feltham, Middlesex. [Boro' and Battersea Polytechnics; nine years' experience.]
- Butterworth, John Pilling, B.Sc. (Manc.), 47, Broad Lane, Dalton, Huddersfield. [Works Chemist, British Dyes, Ltd.]
- Calam, Percy, B.Sc. (Lond.), A.R.C.S., 33, Argyle Road, Saltcoats, Scotland.
 [M.; Research.]
- Cant, Thomas, M.A. (Glas.), B.Sc. War (Lond.), Kilty Avenue, Bo'ness, Scotland. [M.]
- Cardell, Lieut. Ivor Southwell, M.Sc. (Wales), 5, Whitchurch Road, Cardiff.
 [S.]
- Chadwick, Robert Bertram, B.Sc. Tech. (Manc.), 121, Lochend Road, Leith, Edinburgh. [Works Chemist.]
- Chambres, Rev. Gordon Crewe, M.A. (Oxon.), Headmaster, The Grammar School, Wigan.
- Charlton, 2nd Lieut. James, B.Sc. (Vict.), 62, Ainsdale Road, Bolton, Lanes. [M.; S.; Research.]
- Clark, Arthur Herbert, B.Sc. (Birm.), 128, Bournbrook Road, Selly Hill, Birmingham. [M.]
- Clarke, Herbert Edmund, M.A., B.Sc. (Oxon.), 4. Selborne Avenue, Low Fell, Gateshead-on-Tyne. [Chemist, Cookson & Sons; Lead and Antimony Research.]
- Clayton, William, M.Sc. (Liv.), 162, North Hill Street, Liverpool. [S.]
- Clifford, Lieut. Percy Herbert, B.Sc. War (Lond.), The Acacias, Hillingdon, Middlesex. [M.; S.]

- Coakill, Edgar Alfred, 206, Green Street, Brimsdown, Middlesex. [Finsbury Tech. Coll.; M.]
- Cockram, A/M II. Leslie, B.Sc. (Vict.), c'o 1, Evesham Road, West Ham, London, E. 15. [M.]
- Coles, Leonard Arthur, B.Sc. (Lond.), Ludlow House, Wakefield Road, Huddersfield. [Research; Dyes.]
- Coomes, Arthur Nelms, 76, Wrottesley Road, Woolwich, London, S.E. 18. [Finsbury Tech. Coll. Certif.; twenty-one years' experience; M.]
- Couch, Daniel Little, 59, Haig Road, Plaistow, London, E.13. [Battersea Polytech.; Central Tech. Coll.; Works Manager and Research Chemist.]
- Craig, Robert, Benmore, Bromborough, Cheshire. [Roy. Tech. Coll., Glasgow; Works Manager, Lever Bros.]
- Cramer, Barnett Joseph, M.Sc. Tech. (Manc.), c/o Messrs. The Straits Trading Co., Ltd., Singapore. [Straits Trading Co.; Research.]
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 [Finsbury Tech, Coll.; H.; Works and Research Chemist.]
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- Davies, William Eynon, B.Sc. (Wales), Bolafron, Verwig, Cardiganshire. [M.; S.]
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 [S.: M.]
- Denbigh, George James, B.Sc. (Leeds), 2, The Paddock, Rothwell, nr. Leeds. [Head of Chemistry Dept., Luton Technical Institute; M.; Research.]
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- Done, Edward, M.Sc. (Birm.), 390, Slade Road, Erdington, Birmingham. [Research Chemist.]
- Dovey, Ernest Roadley, A.R.C.S. (Lond.), Government Laboratory, Hong Kong.
- Dunningham, Alfred Charles, D.Sc. (Lond.), Ashville, Middlewich, Cheshire. [Science Master; M.]
- Dyer, 2nd Lieut. Alfred, B.Sc.Tech. (Manc.), 7, Chaucer Street, West Cott Street, Hull. [Research; M.]
- Essery, Reginald Ernest, B.Sc. (Bris.), 47, Hamilton Road, Southville, Bristol. [S.; M.]
- Ferguson, James, Mountside, Prestwich Park South, Manchester. [Leeds Univ.; sixteen years' experience; M.; Research.]

- Fielden, Harold, B.Sc. (Leeds), c'o The British South African Explosives Co., Ltd., Dynamite Factory, Modderfontein, Transvaal, S. Africa. [M.]
- Findley, Albert Edward, B.Sc. (Birm.), 12, Violet Bank Road, Sheffield. [Fuel Distillation; Research.]
- Fine, Isedor, B.A. (Cape of Good Hope), c/o The Institute of Chemistry. [M.]
- Firth, James Brierley, M.Sc. (Manc. and Dub.), 34, Kew Gardens, Monkseaton, Northumberland. [Director and Chemical Adviser, Firth & England, Ltd.]
- Fisher, Alfred, B.Sc. (Lond.), 7, Castle Road, Warley, Manchester. [M.] Francis, Arthur Clarence, 316, Morningside Road, Edinburgh. [I.I.: M.]
- Francis, Arthur Clarence, 316, Morningside Road, Edinburgh. [1.1.; M.] Fuller, Cyril Duncan, c/o Aspinall's Enamel, Ltd., Goodwood Road, New Cross, London, S.E. 14. [Works Manager, Aspinall's Enamel, Ltd.]
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- Garrard, Stanley Frederick, M.Sc. (Manc.), Long Stratton, Norfolk. [M.]
- Gaunt, Percy, A.M.S.T., Prestbury, nr. Macclesfield, Cheshire. [Manager and Chemist, Macclesfield Sewage Disposal Works.]
- Gee, John Hargrave, B.Sc. (Birm.), 93, Common Lane, Ward End, Birmingham, [Chemist in Charge, Gas Works.]
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 [M.; Research; Dyes.]
- Gladding, Geoffrey, M.Sc. (Manc.), 4, Heaton Road, Heaton Norris, Stock-port, [Research Chemist, Hardman & Holden, Ltd.]
- Gordon, Peter Ferguson, Seikkyi Refinery, nr. Rangoon, Burma. [Heriot-Watt Coll.: S.]
- Graham, Hugh, B.Sc. (Q.U.B.), c/o Maclean, 31, Barrington Drive, Glasgow, W. [M.]
- Graham, Joseph Ivon, B.Sc. (Lond.), A.R.C.S.I., B.A. (Cantab.), Meadowlands, Dundrum, Co. Dublin. [S.; Chief Chemist, Doncaster Coal Owners' Research Lab.]
- Green, Fred, B.Sc. (Sheff.), 64, Chequer Road, Doncaster, Yorks. [Since 1913 with G.N.R. Research.]
- Green, Lieut. Stanley Joseph, M.A. (Cantab.), R.N. Experimental Station, Stratford, London, E.15. [S.; Research.]
- Haigh, William D., B.A., B.Sc. (N.U.I. and R.U.I.), A.R.C.S I., Chemical Department, King's College, Strand, London, W.C. 2. [Dept. of Sci. and Ind. Research.]
- Hammond, David William, B.Sc. (Glas.), 126, Monica Road, Small Heath, Birmingham. [M.]
- Hanna, Godfrey Fitz-Gerald, B.A. (Cantab.), 5, Hatherton Street, Walsall. [Research; M.]

Hargreaves, George Watson, M.Sc. (Queensland), H.M. Factory, Ellesmere Port, Cheshire. [M.]

Harrison, George Frederick, A.R.C.S.I., 78, Hollybrook Road, Clontarf, Dublin. [Twelve years' experience.]

Harrison, Lieut, John Vernon, B.Sc. (Glas.), 34, Rowallan Gardens, Partick, Glasgow, [M.; S.]

Harrison, Miss Sophy M., H.M. Factory, Site "B," Oldbury, Birmingham. [Oxford Honour School of Nat. Sci.; Science Mistress; M.]

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Hedley, Edgar Percy, Ph.D. (Leipzig), A.R.C.S.I., Westmead, Victoria Avenue, Borrowash, nr. Derby. [M.]

Henesey, Sergeant Fred., B.Sc. (Liv.), Anti-Gas Dept., University College, Gower Street, London, W.C. 1. [S.]

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Hewitt, Major James Arthur, R.A., B.Sc. (St. Andrew's), Headquarters, Western Command, Chester. [S.]

Hibbert, Captain John, R.A.F., A.M.S.T., 34, Cromwell Grove, Levenshulme, Manchester. [Research; M.]

Hillman, Eric Stanley, B.Sc. (Lond.), 1, Cambridge Road, Huddersfield. [Research; Dyes.]

Hislop, Charles Andrew, 7, The Ridge, East Riggs, Dumfriesshire. [Roy. Tech. Coll., Glasgow; seventeen years' experience.]

Hoare, Arthur Charles, A.R.S.M., D.I.C., 63, Englewood Road, Clapham Common, London, S.W. 12. [Nineteen years' experience; Res. Chem. Morgan Crucible Co.]

Hodgkin, Captain Adrian Eliot, B.A. (Oxon.), Winnington Old Hall, Northwich, Cheshire. [M.]

Hodkin, Frederick William, B.Sc. (Sheff.), 28, Thoresby Road, Hillsbro', Sheffield. [Science Master; M.]

Holden, Thomas Halstead, M.Sc. (Liv.), 16, Hillside Road, Wallasey, Cheshire. [Research; Drugs.]

Howie, Matthew, c.o Carrie, 10, Marchmont Street, Edinburgh. [I.I.; North British Rubber Co.]

Hussey, Captain Arthur Vivian, R.E., A.C.G.I., Ivy Cottage, Evendons Lane, Wokingham, Berks. [S.]

Hutchison, Charles Graham, B.Sc. (Lond.), 1, Leaside Avenue, Muswell Hill, London, N. 10. [Government Laboratory.] Inglis, Gavin, B.Sc. (Lond.), 82, Great Brook Street, Birmingham. [Research.]

Inman, Captain Wallace Mills, R.E., M.Sc. (Liv.), 5, Hardshaw Street, St. Helens, Lancs. [S.]

Jackson, Joseph Stanley, B.Sc. (Dun.), 4, Clifton Avenue, Crewe. [Chemistry Master; M.]

James, Captain Talfryn, 127, Woodfield Street, Morriston, Glam. [Univ. Coll., Aberystwyth; S.]

Jary, William Frederick, B.A. (Cantab.), 191, Barclay Road, Warley Woods, Birmingham. [M.]

Jinkings, Arthur John, B.Sc. (Lond.), The Poplars, Lower Bebington, Cheshire. [Chemist, Lever Bros.]

Johnson, Harry Tyrer, M.Sc. (Liv.), Graesser Villa, Russell Street, Cefn, Ruabon, N. Wales. [Research.]

Jones, John Edward, B.Sc. (Wales), Mercia Villa, Victoria Avenue, Borrowash, nr. Derby. [M.; British Cellulose Co.]

Jones, Lieut, Simon James, B.Sc. (Wales). (Since died of wounds.)

Jones, Thomas Gilbert Henry, B.Sc. (Sydney), P. 14 West, Gretna, Scotland [Research; M.]

Judd, Miss Hilda Mary, B.Sc. (Lond.), A.R.C.S., D.I.C., 34, Barrowgate Road, Chiswick, London, W. 4. [Research; War Work.]

King, Herbert Walter, A.R.C.S. (Lond.), 7, Coleridge Walk, Golders Green, London, N.W. 4. [Analytical Chemist, Riley & Harbord.]

Kipping, Cadet Stanley Percival, Chalcots, 41, Roxborough Park, Harrow-on-the-Hill. [Finsbury Tech. Coll. Diploma; M.; S.]

Kirkland, Rev. Thomas James, B.Sc. (Lond.), A.K.C., King's School, Ely, Cambs. [Teacher of Chemistry.]

Lay, Douglas, A.R.S.M., Aston Hall, Hawarden, nr. Chester. [Nineteen years' experience; publications.]

Levingston, Hugh George, A.R.C.S.I., Sunnyside, 27, Oakley Road, Ranelagh, Dublin. [Research.]

Lewcock, William, B.Sc. (Lond.), 125, Godwin Road, Forest Gate, London, E. 7. [Research.]

Lewis, Edgar, Ivy House, Yrystawe, Clydach, Swansea. [M.; Royal Technical College, Glasgow.]

Loaring, Lieut. Willie Camble, R.E., B.Sc., A.R.C.S., D.I.C. (Lond.), 22, Prospect Park, Exeter. [S.]

Lorains, Lieut. John Page, M.C., B.Sc. (Dun.), Prospect Villa, Whitby, Yorkshire. [S.; M.]

Lorenz, Hans Hugo Herbert, M.A. (Cantab.), Fairfield, Brockley Park, Forest Hill, London, S.E. 23. [Works and Research Chemist.]

Lowe, Austin, A.M.S.T., 39, Chelverton Road, Putney, London, S.W. 15. [Research Chemist, Morgan Crucible Co.]

Lund, William Jackson, M.Sc. Tech. (Manc.), 91, Mitchell Street, Rochdale, Lancs. [M.; Research; Dyes.]

- Mact'ulloch, Lieut, Andrew Francis, M.A., B.Sc. (Edin.), Government Medical Stores, Madras, India. [S.; Research.]
- MacIntyre, Kenneth, A.R.C.S. (Lond.), 34, Whitehall Road, Harrow-on-the-Hill. [M.]
- Maclean, Alexander, A.R.T.C., Fern Bank, Tottington Road, Bury. [M.; S.]
- Marrack, Miss Muriel Tregarthen, B.Sc. (Lond.), 16, Clanricarde Gardens, Hyde Park, London, W. 2. [Research.]
- Matthews, Captain George Leslie, B.Sc. (Lond.), 44, Princes Road, Teddington, Middlesex. [S.; Mentioned in despatches.]
- McCraith, John Stuart, M.Sc.Tech. (Manc.), 39, Brook Street, C.-on-M., Manchester.
- McCulloch, Andrew, 143, Mottram Road, Stalybridge, Cheshire. [Coll. of Technology, Manchester; S.]
- McFarlane, Archibald, M.Sc. (Leeds), East View, Woodside, Horsforth, nr. Leeds, [Lecturer in Chemistry.]
- McIntyre, Robert, A.R.C.S., Glenetive, High Road, Stevenston, Ayrshire.
- McKerrow, John Armour, M.A., B.Sc. (Glas.), 2, Kymer Villas, Kidwelly, Carm. [Science Master; M.]
- McKillop, George Francis, Dunglas, Broxburn, West Lothian. [Roy. Tech. Coll., Glasgow; twenty-one years' experience.]
- McKnight, James Robert, M.A., LL.B. (Cantab.), B.Sc. (Lond.), 21, Barras Lane, Coventry. [M.]
- McQueen, James, junr., No. 3, Staff Quarters, East Riggs, Dumfriesshire. [Roy. Tech. Coll., Glasgow; S.; M.]
- Miles, William Herbert, 15, Ormiston Road, New Brighton, Cheshire. [Central Tech. Sch., Liverpool; Chief Chemist, Mersey Oil and Cake Mills Co.]
- Miller, Eric Julius, 7, Buckingham Gardens, Perambur Barracks, Madras, [Leeds Univ.; Asst. Chem., Binny Bros.]
- Miskin, Frederick Fenby, 9, Grove Place, Penarth, Glam. [Hull Tech. Coll.; Chief Chemist, Cement Works.]
- Moore, Sergeant Edward William James, B.Sc. (Lond.), 62, High Cross Road, Tottenham, London, N. 17, [S.]
- Moore, Robert Alfred, B.Sc. (Dun.), 6, Sunbury Avenue, West Jesmond, Newcastle-on-Tyne. [War Work.]
- Moore, Thomas William, M.A., B.Sc. (Edin.), Reba Villa, Rowlands Gill, co. Durham. [Chief Chemist, Messrs. Cookson & Co.; Research.]
- Morris, Joseph. M.A. (Oxon.), Adlam, Cliff Road, Wallasey, Cheshire. [Teaching.]
- Morrison, James Alexander Shepherd, M.Sc. (Leeds), The Limes, Frodsham, Cheshire. [Works Chemist.]
- Mondgill, Kishori Lal, B.Sc. (Glas.), Christ's College, Cambridge. [Research War Work.]

- Muirhead, William, Bracadale Terrace, Woodhead Avenue, Kirkintilloch. [Roy. Tech. Coll., Glasgow; Head Chemist, Nickel Co.]
- Munro, Leslie Alexander, B.A. (Oxon.), The Bungalow, Wincham, Cheshire. [Research; M.]
- Mussell, Albert George, 111, Mitcham Road, East Ham, London, E. 6. [East London Coll.; Anal. and Works Chemist, Burgoyne Burbidges; Research.]
- Newbery, Lieut. George, B.Sc., A.R.C.S. (Lond.), D.I.C., Instow, Westbury Road, New Malden, Surrey. [S.; Works Chemist; Research.]
- Nicholas, Sydney Diggary, H.M. Factory, Sutton Oak, St. Helens. [Oxford Univ.; M.]
- Norman, Thomas Stanley, M.A. (Cantab.), Lyndhurst, Runcorn, Cheshire.
 [M.]
- Northing, Herbert Cecil, A.R.C.S.I., 2, Little Moor Hill, Smethwick, Birmingham. [M.]
- Nurse, Lieut. Edwin Hart, R.A.F., B.Sc. (Lond.), Southwold, Lewis Road, Sutton, Surrey. [Govt. Lab.; S.]
- Palmer, Charles Wilfred, B.Sc. Tech. (Manc.), Heaton House, Wilmslow Road, Withington, Manchester. [Manchester Oxide Co.]
- Parrish, Percy, 64, Foyle Road, Blackheath, London, S.E. 3. [Huddersfield Tech. Coll.; Manager, Chemical Works, South Metropolitan Gas Co.]
- Parry, Reginald Ezra, M.Sc. (Melbourne), 82, The Rand, East Riggs, Dumfriesshire, Scotland. [M.; Research.]
- Paterson, James Bertram, B.Sc. (Lond.), 4, Canberra Road, Gretna, Scotland. [S.: M.: Research.]
- Paul, Lieut. Hamilton, R.E., B.A. (Cantab.), 7, Vernon Avenue, Huddersfield. [Brewer; S.]
- Pearce, Lieut. Leonard Roger Batten, B.Sc. (Lond.), 45 Craven Walk, Stamford Hill, London, N. 16. [Northern Polytechnic; S.; M.]
- Pearson, Herbert, B.Sc. (Vict.), 4, Leinster Gardens, Runcorn, Cheshire. [Drugs.]
- Pearson, Mrs. Leonore, M.Sc. (Manc.), The University, Manchester. [Asst. Lecturer in Chemistry; Research.]
- Pearson, Stanley, M.Sc. (Birm.), 21, Kingsway, Coventry. [Works Chemist, Messrs. Courtaulds, Ltd.; Research.]
- Peck, Harry, M.Sc. (Manc.), 44, Windsor Road, Forest Hill, London, E. 7. [Research; Dyes; S.]
- Pennington, Miss Hannah Smith de, B.Sc. (Lond.), 39, Dukes Brow, Blackburn. [Assistant Lecturer, Blackburn Tech. Coll.; Research.]
- Perks, Frank Burstall, B.Sc. (Lond.), Lynton, Kineton Road, Olton, nr. Birmingham. [Nine years' experience.]
- Pickard, Lieut. Clarence Edward, 68, Aldeliffe Road, Lancaster. [Univ. Coll., Notts; S.]
- Pickering, Walter James, Coal Test Works, City Gas Dept., Nechells Works, Birmingham. [Birm. Mun. Tech. Sch.; Acting Superintendent, Birm. Gas Dept. Coal Testing Works.]

- Popham, Frederick James William, 71, Kennington Avenue, Bishopston, Bristol. [Finsbury Tech. Coll. Certif.; Thirteen years' experience.]
- Potter, Charles Etty, B.Sc. (Vict.), 15, Perrymead, Prestwich, Manchester. [Research; Dyes.]
- Probert, Maurice Ernest, B.Sc. War (Lond.), Trevine, New Barnet, Herts. [S.]
- Purdon, Lieut, Arthur Oscar, B.Sc. (Leeds), Etherington House, Driffield.
 [S.]
- Randolph, Charles Edward, B.Sc. (Lond.), 21, Wentworth Street, Huddersfield, Yorks. [Dyes.]
- Ray, Lieut. Frederic Martin, B.Sc. (Lond.), 61, Musgrove Road, New Cross, London, S.E. 14. [S.; M.]
- Raymond, Lieut. Leonard William, R.E., B.A., B.Sc., A.R.C.S. (Lond.), West End, Lifton, Devon. [S.]
- Read, Harold Richard, A.R.C.S.I., 16, Church Road, Wavertree, Liverpool. [Chief Asst., Dr. E. Ormerod.]
- Remfrey, Frederic George Percy, B.A. (Cantab.), D.Sc. (Geneva), Mines de Boson, Fréjus, France. [Research.]
- Rheinlander, Arthur Henry, B.Sc. (Lond.), St. Leonards, Rodney Road, New Malden, Surrey. [Govt. Lab.]
- Rhodes, Norman, M.Sc. (Leeds), No. 2, Carnatic Gardens, Perambur Barracks Road, Madras, India. [Nine years' experience; Chief Chemist, Binny & Co.]
- Robertson, George Scott, M.Sc. (Dun.), The East Anglian Institute of Agriculture, Chelmsford. [Analyst and Lecturer; S.]
- Rodger, Lieut. Lawton Keir, Avonholme, Rutherglen, Scotland. [Roy. Tech. Coll., Glasgow; S.]
- Ronca, James Francis, A.R.C.S., 176, Elms Road, Clapham Common, London, S.W. 4. [Government Service.]
- Ross, James Stiven, M.A., B.Sc. (St. Andrews), 19, Edgbaston Road, Smethwick, Staffs. [S.; M.]
- Ruston, Miss Monica Mary, B.Sc. (Lond.), 65, Albert Palace Mansions, Battersea Park, London, S.W. 11. [M.]
- Sanderson, William Edward, 27, Westfield Avenue, Oakes, Huddersfield. [Leeds Univ.; Dyes.]
- Scharff, Godfrey Edward, B.A. (Cantab.), Mill House, Wetheral, Carlisle. [S.; Research; M.]
- Schoeller, Walter Raymond, Ph.D. (Greifswald), 57, York Street, Baker Street, London, W. 1. [Thirteen years' experience; now with D. C. Griffiths & Co.]
- Scott, James Lang, Twynholm, Bramley, Surrey. [Roy. Tech. Coll., Glasgow; fifteen years' experience.]
- Selfridge, John, M.A., B.Sc. (Glas.), 30, Mannering Road, Shawlands, Glasgow. [M.]
- Shalleross, Lieut. Arthur, R.A.F., M.Sc.Tech. (Manc.), 19, Langdale Road, Heaton Chapel, Stockport. [S.]

- Sharp, Frederick Lawrence, 4, Rushwood Avenue, West Bridgford, Notts. [Finsbury Tech. Coll.; Drugs.]
- Simmons, 2nd Lieut. William Hall, 4, Wimborne Road, Edgbaston, Birmingham. [East London Coll.; S.; M.]
- Singleton, Leslie, B.Sc. (Lond.), 2, Cliff Grove, Heaton Moor, Stockport.
- Sinkinson, Eric, D.I.C., 14a, Albert Bridge Road, London, S.W. 11. [Demonstrator in Technical Chemistry, Imperial College of Science and Technology.]
- Skilling, William James, 33, Albert Drive, Crosshill, Glasgow. [Roy. Tech. Coll., Glasgow; M.; Manager, National Tar Products, Ltd.]
- Slater, Wilfrid Ernest, M.Sc. (Vict.), 10, Marlborough Road, Lee, London, S.E. 13. [M.; Research.]
- Smith, George, M.Sc. (Vict.), 41, Hamfrith Road, Stratford, London, E. 15. [Research; War Work; S.]
- Smith, John Campbell, B.Sc. (Edin.), Heriot-Watt College, Edinburgh, [Lecturer in Chemistry; Research.]
- Spiers, Sergeant Charles William, R.E., M.Sc. (Bris.), 1, Dundonald Road, Redland, Bristol. [Research; M.]
- Stark, David Carmichael, Staff Hostel, Blackbank, Gretna, Scotland. [Glasgow Univ.; M.]
- Stedman, Lieut. Ernest, R.G.A., M.Sc. (Vict.), Martindale, Yarnfield, Stone, Staffs. [S.]
- Stern, Harry, B.Sc. War (Lond.), 35, Marlborough Street, Brighton, Sussex. [S.; Research.]
- Stewart, Alan West, D.Sc. (Brussels), 29, Westbere Road, Cricklewood, London, N.W. 2. [Analyst and Demonstrator in Chemistry R.I.P.H.]
- Still, Charles James, B.Sc. (Lond.), 65, Oak Road, Crumpsall, Manchester. [Demonstrator in Chemistry; Research; Dyes.]
- Stokoe, William Norman, B.Sc. (Lond.), Park View, Chow Dene, Low_Fell, Gateshead-on-Tyne. [M.]
- Streatfeild, Frederick Henry, 54, Belgrave Road, Wanstead, London, E. 11. [Finsbury Tech. Coll.; Lecturer; Research.]
- Swann, Herbert, B.Sc. Tech. (Manc.), 47, Upper Wickham Lane, Welling, Kent. [M.]
- Tatam, George William Gerald, 3, Courtney Road, Croydon, Surrey. [Finsbury Tech. Coll.; Gas Works Manager.]
- Tatton, Samuel Bertram, B.Sc. (Lond.), 7, Rollason Road, Dudley, Staffs.
 [Science Master; M.]
- Taylor, Captain and Adjutant William Currie, M.A., B.Sc. (Edin.), (deceased).
- Templeman, Lieut. William Henry, B.A. (Cantab.), R.N. Ordnance Depôt, Crombie, nr. Dunfermline. [M.; S.]
- Thin, Captain Russell Gibson, B.Sc. (Edin.), 2, Chalmers Crescent, Edinburgh. [I.I.; S.]

- Thomas, John Sidney Gordon, A.R.C.S., B.Sc. (Wales and Lond.), 2, Orehard Road, Hook, nr. Surbiton. [Chemist and Physicist; Gas.]
- Thomas, Lieut. William, B.Sc. (Wales), Prisoner of War.
- Todd. Ernest Herbert, M.A. (Oxon.), 6, Thornbury Avenue, Southampton. [S.]
- Topp, Arthur Albert, Cordite Factory, Maribyinong, Melbourne, Victoria, Australia. [Working Men's Coll. and School of Mines, Melbourne; M.]
- Towse, Walter, e'o Messrs. Clark, Son & Morland, Ltd., Glastonbury. [Leeds Univ. and Armstrong Coll., Newcastle-on-Tyne; Leather.]
- Trotter, Lieut. William, A.R.C.S., 9, Southfield Square, Bradford. [S.]
- Tutton, Henry Ralph, 1, Wentworth Street, Huddersfield. [Merchant Venturers' Tech. Coll., Bristol; Dyes.]
- Urquhart, Hugh Campbell, B.Sc. (Melbourne), H.M. Factory, Ellesmere Port, Cheshire. [M.]
- Vallance, Reece Henry, B.Sc. (Birm.), 284, Franklin Road, King's Norton, Birmingham. [S.]
- Waele, Armand de, Messrs, J. Hall & Sons, Ltd., Broadmead, Bristol. [Regent Street Polytechnic; M.; Fourteen years experience; Manager and Chief Chemist, John Hall & Son.]
- Walker, Frederick Handel, B.Sc. (Dun.), 3, Stannington Grove, Heaton, Newcastle-on-Tyne. [S.; M.]
- Walsh, Thomas Crosbie, c/o Liebig's Extract of Meat Co., Ltd., Fray Bentos, Uruguay. [Finsbury Technical College Certif.; over fifteen years' experience.]
- Ward, Percy James, M.Sc. (Birm.), Messrs. Indo-Burma Petroleum (o., Ltd., Seikkyi Refinery, nr. Rangoon, Burma.
- Waters, Lieut. Percy Wharton, A.M.S.T., 3, Stanley Road, Heaton Moor, Stockport. [S.; Croix de Guerre.]
- Watson, Herbert Ben, B.Sc. (Wales), Drummond, Llandudno. [M.; S.]
- Watson, Herbert Louis, B.Sc. (Aberd.), Brooklyn, 53, Aytoun Road, Pollokshields, Glasgow. [S.; M.]
- Watson, Captain John, M.C., B.Sc. (Dun.), 2, Corporation Road, Darlington. [S.]
- Webster, Thomas Arthur, 1b, Tressillian Crescent, London, S.E. 4. [Liverpool Univ.; under Medical Research Com., Nat. Health Insurance.]
- Weeks, Frederick William, 270, Blackburn Road, Edgworth, nr. Bolton. [College of Technology, Manchester; Diploma.]
- Welch, Sidney Arthur, B.Sc. (Lond.), 49, Grovehill Road, Redhill, Surrey.
 [M.]
- Welsford, Captain Giles Hadden, 33, Delamare Mansions, London, W. 9. [Central Tech. Coll., London; S.; M.]
- West, 2nd Lieut. Joseph Dominic Francis, Experimental Station, X.A.D., R.A.F., Aboukir, Egypt. [S.]
- Westman, Le Roy Egerton, M.A. (Toronto), Inland Revenue Dept., 317, Queen Street, Ottawa. [Food and Drugs.]

- Weston, Edmund Percy, B.Sc. (Dun.), 43, North View Terrace, Benwell, Newcastle-on-Tyne. [M.; Hospital Chemical Research.]
- Wheatley, Arnold Herbert Maurice, B.Sc. (Leeds), 27, Belle Vuc Crescent, Llandaff North, Glam.
- Whitaker, Arnold, B.Sc. (Lond.), A.R.C.S., D.I.C., The Royal Naval Cordite Factory, Holton Heath, Dorset. [M.]
- White, John William, B.Sc. (Lond.), c/o E.C. Powder Co., Ltd., Green Street Green, Dartford, Kent. [M.]
- Whitham, Harry, 11, Stanley Road, New Ferry, Birkenhead. [College of Technology, Manchester; Departmental Manager, Chemical Engineering Labs., Lever Bros.]
- Wilde, William, 111, Manchester Road, Hapton, nr. Burnley. [Manager, John Riley & Sons, Ltd.]
- Williams, Charles Gordon, B.Sc. (Lond.), Tregoodwell, Penrhyndeudraeth, N. Wales. [M.]
- Williams, Harold Wanson, B.Sc. (Wales), Heathfield, Risca, Mon. [M.]
- Williams, Harry, 149, Walton Street, Oxford. [Guy's Hospital; Stadtische Lab., Mannheim; Chemist in Charge of Plant, Boake, Roberts & Co.]
- Williams, Henry James, B.Sc. (Wales), 12, High Street, Gilfach Goch, Glam. Williams, John Guilfoyle, B.Sc. (Lond.), H.M. Factory, Langwith, nr. Mansfield. [M.]
- Williams, Percy Noel, B.Sc. (Liv.), 10, Blendon Terrace, Plumstead, London, S.E. 18. [S.; M.]
- Willstrop, John William Wesley, B.Sc. (Birm.), Dunbar, Fellows Road, S. Farnborough, Hants. [M.]
- Wilson, William John, A.C.G.I., Haslemere, Lyndhurst Gardens, Finchley, London, N. 3. [Research; Oil.]
- Winmill, Thomas Field, B.Sc. (Lond.), B.A. (Oxon.), 15, Bisham Gardens, Highgate, London, N. 6. [Director, Petroleum Research, Ministry of Munitions.]
- Wintle, Albert Watkins Maggs, 170, Newbridge Road, St. Anne's Park, Bristol. [Br'stol Univ.; Roy. Tech. Coll., Glasgow; Research; Alkali.]
- Wisbey, Ewart Osmond, B.Sc. (Wales), 60, Bankfield Road, Manchester Road, Huddersfield.
- Wood, James William, M.Sc. Tech. (Manc.), The Fuel Dept., The University, Leeds.
- Wright, Miss Winifred, B.Sc. (Birm.), c/o Messrs. Johnson & Sons, Manufacturing Chemists, Ltd., Hendon Works, Renters Avenue, Hendon. London, N.W. 4.
- Young, Roland Francis, 2, Aberdeen House, Kenton Street, Russell Square, London, W.C. 1. [Finsbury Technical College Certif.; M.]

Students.

Allen, Frank Laurence, 300, Central Park Road, East Ham, London, E. 6. Angus, George Bagrie, 24, Clarence Street, Edinburgh.

Bai'ey, Wilfred Arthur, 16, Heathwood Gardens, Old Charlton, London, S.E. 7.

Bateman, Edgar William, 40, Vernon Gardens, Seven Kings, Essex.

Bloom, Edward, 61, Berwick Street, London, W. 1.

Brindle, Harry, 54, Cawdor Road, Fallowfield, Manchester.

Burtt, Arnold Wigham, Wayside, Broughton, Kettering.

Clarke, Barri Ernest, 177, Anglesey Road, Burton-on-Trent.

Fraser, James Ross, 13, Archibald Road, Tufnell Park, London, N. 7.

Harbord, Lieut. Vernon, Englewick, Englefield Green, Surrey.

Johnson, Ernest Norman, 167, Belle Vue Road, Leeds.

Jones, David Llewelyn, I, Marble Terrace, Llandyssul, S. Wales.

Knight, Harry Richard, 2, Roxley Road, Lewisham, London, S.E. 13.

Maplethorpe, Cyril Wheatley, University College, Gower Street, W.C. 1.

Porter, Charles Raymond, 21, St. Martin's Road, Canterbury.

Price, Tom Brinley, 8, Victoria Road, Penarth, nr. Cardiff.

Sykes, Arthur Hales Hugesson Ganthony, 16, Edith Road, West Kensington, London, W. 14.

Tookey, Miss Phyllis Margaret, Combe Lodge, Duncombe Hill, Forest Hill, London, S.E. 23.

Wiseman, Cecil Edgar, 54, Wellwood Road, Goodmayes, Ilford, Essex.

DEATHS.

Fellows.

David Bendix.

Arthur Clegg Bowdler.

Harry Broadbent.

Richard John Hall, M.Sc. (Vict.).

Walter Augustus Handcock,

Lieut. ('ol. Edward Frank Harrison, ('.M.G., Officer of the Legion of Honour.

Thomas Watson Lovibond.

Prof. Alfred Senier, M.D. (Michigan), Hon. D.Sc. (R.U.I.), Ph.D. (Berlin).

Associates.

Lieut. Simon James Jones (died of wounds).

Elias Mendoza.

Student.

2nd Lieut. Stuart Wycliffe Goodwin, M.C. (killed in action).

General Notices.

Local Sections.—The following Local Sections have been formed:—

EDINBURGH AND EAST OF SCOTLAND.

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Vice-Chairman. - Dr. L. Dobbin.

Committee :-

J. G. Annan.

Dr. A. A. Boon. D. C. Crichton.

Dr. A. C. Cumming, O.B.E.

Prof. J. Hendrick.

Dr. A Lauder.

Prof. A. McKenzie, F.R.S.

Mr. Stevenson J. C. G. Macadam.

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Mr. B. D. Porritt.

Prof. James Walker, F.R.S.

Dr. Henry E. Watt.

Hon. Secretary and Treasurer.—Mr. B. D. W. Luff, 85, Ashley Terrace, Edinburgh.

GLASGOW AND WEST OF SCOTLAND.

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Committee :—

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Dr. C. H. Desch.

Dr. A. J. Robertson.

Dr. J. Weir.

Mr. F. W. Harris.

Mr. W. W. Lumsden.

Mr. R. T. Thomson.

Mr. Thomas Cockburn.

Mr. James Sorley.

Hon. Secretary and Treasurer.—Mr. T. A. Wilson, Corporation Chemical Dept., 20, Trongate, Glasgow.

GRETNA.

Committee :--

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Mr. A. Cottrell.

Mr. W. G. Emmett.

Mr. C. Hislop.

Dr. A. G. Innes.

Secretary.—Mr. F. D. Miles, Research Branch, Chemical Dept., H.M. Factory, Dornock.

LIVERPOOL.

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Mr. H J. Evans.

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Hon. Secretary and Treasurer.—Mr. John Hanley, 7, University Road, Bootle Liverpool.

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Mr. L. E. Vlies.

Hon. Secretary.—Mr. David Cardwell, 50, Alexandra Road South, Manchester, S.W.

SWANSEA.

Committee :-

Mr. Edward Anderson.

Mr F. J. Bloomer.

Mr. John Christie.

Mr. T. Eynon Davies.

Dr. T. Campbell James. Captain J. W. McDavid. Mr. C. A. Seyler. Mr. A. J. Shelton. Dr. Ernest Vanstone

Hon. Secretary.—Mr. Herbert Mansfield, Westmore, Ferryside, S. Wales.

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Committee :--

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Mr. R. F. Blake.

Sir C. A. Cameron, C.B.

Mr. B. J. Fagan.

Dr. A. K. Macbeth. Dr. J. H. Millar.

Prof. Hugh Ryan.

Prof. Sydney Young.

Hon. Secretary. - Dr. A. G. G. Leonard, 18, Belgrave Road, Dublin.

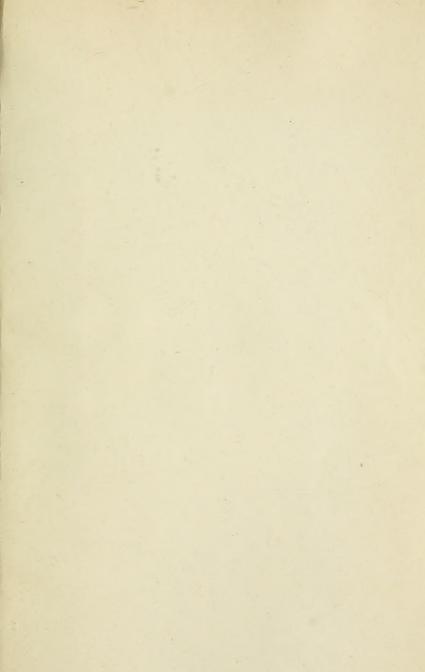
Examinations.—The Council give notice that Examinations will not be held in January, 1919. Future arrangements will be announced in due course.

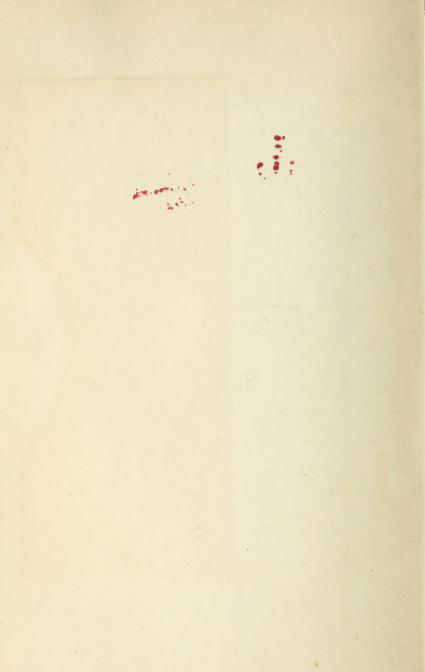
Notice to Associates.—Associates elected prior to November, 1915, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, can obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in securing appointments for qualified chemists.

The Library.—The Library is open for the use of Fellows, Associates and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. and 2 P.M.), except when examinations are being held.





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